

PURCHASING

SEPTEMBER, 1940.....CONTENTS

Preparedness for Purchasing 35

Publisher's Announcement—Only One Way is Open... 37
Harvey Conover

How the Western Electric Company Buys 39
P. M. Marshall

The Purchasing Agent Buys Alloy Steel 51
C. M. Schwitter

Keeping a Varied Inventory Sensitive 57
C. Reynell

What the Purchasing Agent Should Know About Oxy-
Acetylene Welding and Cutting Equipment and Proc-
esses 59
L. D. Burnett

Silhouette Studies 66
J. C. Andrews
C. D. Taylor
R. L. Grube

We Talk It Over in a Conference Room 68
A. A. Krome

Voluntary Priorities 85

Governmental Purchasing Notes 95

MONTHLY FEATURES

Yours on Request 10, 12, 14, 16

F. O. B. 22

The Market Place 69

Personalities in the News 72

Among the Associations 78

Obituary 86

New Products—Ideas 122

Index to Advertisers 141

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PURCHASING is an independent journal, not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

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PREPAREDNESS FOR PURCHASING



THE accent on national preparedness touches far more than the military and naval establishment. It is already being felt in virtually every phase of our national life. Three facts have definitely been proved:

1. Preparedness requires time. Delay in getting started is fatal.
2. Manpower is useless without material. That means rapidly increasing production activity and a heavier purchasing program.
3. Material and production facilities are useless without trained personnel.

All three of these points are important to purchasing. The last is particularly significant. Industrial purchasing departments have been notoriously undermanned for the past decade. In hundreds of companies the curtailment of buying personnel during the great depression has never been adequately restored.

By harder work, by streamlined procedures, and by increased skill, purchasing men have met the situation with conspicuous success. But there is a limit to this process. Further, it does not take into consideration the increased load now in immediate prospect, nor does it provide the longer view essential to the success of an organization. The problem may be intensified in many cases as the military training program takes some of the younger men temporarily out of industrial service.

Now is the time for every forward looking purchasing and management executive to analyze his department and to start building for industrial preparedness. Production begins with purchasing. National defense must not be hampered at the source by a bottleneck of overworked or inexperienced purchasing departments. It means developing a staff of buyers equal to the task, trained to their responsibilities, and given the opportunity to acquire practical competence through actual buying.

Stuart F. Weinritz



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James W. Bancker,
Vice President

HOW THE *Western Electric Company* BUYS

By P. M. MARSHALL

Purchasing Agent

WESTERN Electric Company is the purchasing, manufacturing and distributing organization of the Bell System. On it rests the responsibility of providing apparatus, materials and supplies necessary to build and equip the telephone plant which makes service possible. It provides also the apparatus, materials and supplies necessary to maintain that service under normal operating conditions or under any and all emergencies caused by fires, floods, storms or other "acts of God," be it a tornado in New England, a hurricane in Florida, a flood in the Mississippi valley, an earthquake on the West Coast, or a fire anywhere in the United States.

To carry out its responsibility, the Western Electric Company maintains four manufacturing units located at Chicago, Ill.; Kearny, N. J.; Baltimore, Md.; and Queensboro, Long Island; as well as 29 distributing houses throughout the United States. These houses stock not only the items of Western Electric manufacture but the hundreds of other items, manufactured by outside suppliers, that are necessary to the operation of the Bell System. Chart I shows the location of Company headquarters, manufacturing plants and the nation-wide chain of distributing houses.

On the purchasing department rests the responsibility of obtaining those materials and supplies required by the Company's own manufacturing plants and by the Telephone Companies of the Bell System for maintaining an efficient service.

The magnitude of the work is shown by the fact that in the past fifteen years (1925 to 1939 inclusive) total purchases were, in round figures \$1,500,000,000. The purchases per year vary greatly, from a high of \$264,000,000 in 1929 to a low of \$29,000,000 in 1933. Purchases are now running at the rate of about \$65,000,000 annually. At all times Western Electric must be in a position to provide materials needed, not only those for day-to-day maintenance of the telephone system, but the materials required to restore service after some catastrophe. The hurricane that struck the New England states in September of 1938 was such an emergency. Before the big wind had blown itself out in the Canadian wilds, 600,000 telephones had been silenced, many for days. Telephone damage alone amounted to \$10,000,000. Western Electric's shipments of materials flowed swiftly from its factories and from distributing houses in the area. Some 3,450,000 feet of cable, 54,000,000 feet of drop wire,



The nation-wide organization of the Western Electric Company

21,800 telephone poles and millions of pounds of hardware and other materials were rushed into the stricken communities. These supplies represented many months of normal shipments and were a testimony to the well coordinated purchasing and supply organization of Western Electric.

Western Electric was among the first large companies to recognize the fact that purchasing was one of the primary functions in operating a manufacturing business and that to be carried on efficiently it must be handled by specialists trained for their respective jobs. To accomplish the desired results the Western Electric Company at the turn of the century set up a General Purchasing Department to supervise and coordinate the purchasing work for the Company's three manufacturing plants and branch offices then existing. At that time each operating telephone company in the Bell System had its own purchasing department and each department was competing in the market for materials with all other telephone company purchasing departments and with Western Electric.

When the efficiency of the Western Electric Company's purchasing department became established and recognized, one of the associated telephone companies made a contract with Western Electric whereby Western would take over the function of purchase and supply. As a result, the associated company discontinued its own purchasing organization early in 1901.

The experiment was watched carefully. It proved economical. One by one other operating telephone companies of the Bell System adopted the same plan, until all of them had turned over their job of purchasing and supply to Western Electric.

Organization and Personnel

The purchasing department now consists of a headquarters organization located at 195 Broadway, N. Y., Works purchasing departments at the Company's four plants, Zone Purchasing Agents at the Eastern, Central and Pacific zones, and buyers at each of the 29 distributing houses. Chart II shows the organization of the purchasing department and the general classes of materials coming under the supervision of each Purchasing Agent. The buyers at the distributing houses are on the payroll of those houses and may, at the smaller houses, perform other duties besides purchasing. However, the buyers receive their purchasing instructions from the headquarters purchasing group and their work is supervised by the purchasing department through the Zone Agents.

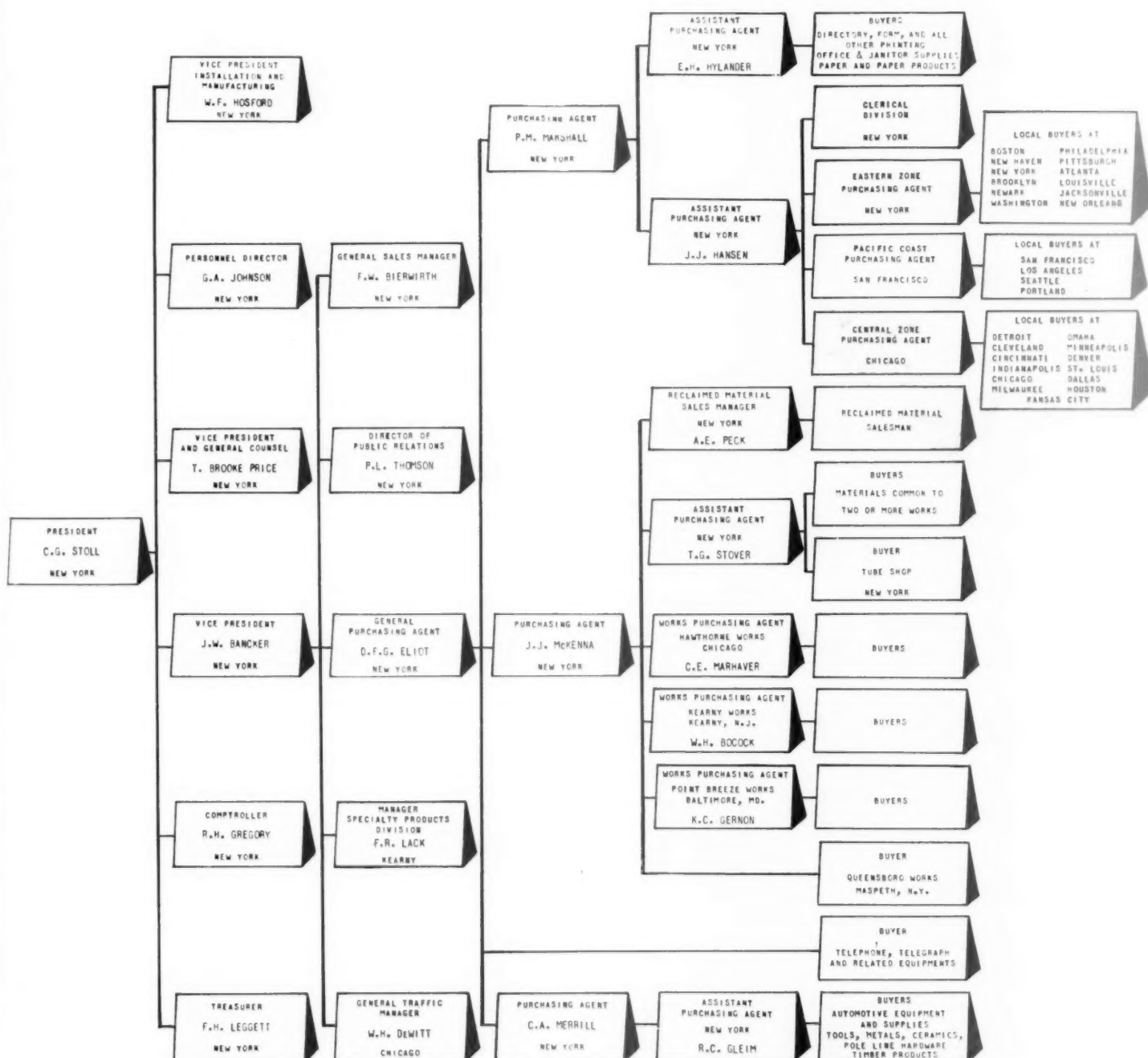
The five men who direct the purchasing department in Western Electric have a combined service record in the Bell System of almost 200 years, so that almost two centuries of experience guide the marketing for Western Electric and the associated telephone companies in the Bell System. James W. Bancker, Vice-

President, began working for Western as an office boy in 1892; D. F. G. Eliot, General Purchasing Agent, entered the company in 1911; C. A. Merrill, P. M. Marshall and J. J. McKenna, Purchasing Agents, have records of 41, 35, and 38 years respectively—all totalling 191 years.

James W. Bancker, Vice President and a director of the Western Electric Company, was born March 26, 1877, in London, England. His parents were natives of New York, and when the boy was five years old he was brought to the United States. Ten years later, young Bancker entered the employ of the Western Electric Company at its New York shop, then located at Thames Street. His first job was that of office boy at a salary of \$3.50 a week. During the next fourteen years he filled various clerical posts and in 1906 became Assistant Superintendent of the shops.

In 1908 Mr. Bancker went to Chicago as Assistant Superintendent of the Hawthorne Works and after a two year interval at New York as superintendent of the shops there, returned in 1911 to the Hawthorne Works in the capacity of Assistant Works Manager. In 1923, when executive headquarters for manufacturing were concentrated in the East, at 195 Broadway, New York, Mr. Bancker was made Assistant Vice-president there. When the company erected its new manufacturing plant at Kearny, N. J., he directed the plans for coordinating it with existing facilities and created its executive organization.

In 1926 he became Comptroller of Manufacture and the next year was elected Vice President and a director of the Company. In this capacity he directs one of the largest purchasing and traffic organizations in industry, having charge of the purchase of materials for the companies of the Bell Telephone System



The responsibilities of purchasing are well organized and directly related to the company's executive management.



1—D. F. G. Eliot, General Purchasing Agent

4—J. J. McKenna, Purchasing Agent

2—C. A. Merrill, Purchasing Agent

5—J. J. Hansen, Assistant Purchasing Agent

3—P. M. Marshall, Purchasing Agent

6—R. C. Gleim, Assistant Purchasing Agent



as well as of those used by the Western Electric Company in its own manufacture. In 1938, his responsibilities were broadened to include direction of the nation-wide distributing organization and the public relations department; and in 1939, the direction of the sales and manufacture of specialty products.

Mr. Bancker is Chairman of the Board of the Manufacturer's Junction Railway Company; a director of the Nassau Smelting and Refining Company, and Teletype Corporation; President and a director of 395 Hudson Street Corporation. He is also a director of the First National Bank and Trust Company of Summit, N. J., and a trustee of the Canoebrook Country Club, Summit, N. J. He is a member of the Bankers Club, New York. He has been active in civic affairs in Summit, serving five years on the Common Council, including four as President. He was Mayor from 1935 to 1939.

Douglas F. G. Eliot, General Purchasing Agent of Western Electric Company, was born in New York City on May 2, 1887. He received his secondary education both in public and private schools of Tarrytown and Irvington, New York, and was graduated from Yale University in 1909 with an A.B. degree. The same year he began his business career with the American Locomotive Company.

In 1911, he joined Western Electric Company as a sales record clerk in the New York headquarters. Rapid promotions followed and in 1915 he became a buyer in the New York distributing house. Two years later Mr. Eliot traveled to Tokyo, Japan, on a special assignment with the Nippon Electric Company, then a Western Electric subsidiary. He remained there until the fall of 1918.

Mr. Eliot, a member of Squadron A of the New York State Militia in 1915 and 1916, returned from Japan in 1918 to serve in the U. S. Army. Shortly after the armistice, he re-entered Western Electric as a buyer with the International Western Electric Company, the subsidiary company that handled Western's foreign business. In 1919 he entered the sales department in New York and in 1922 he returned to Japan, this time to become comptroller and a director of Nippon Electric Company. He was subsequently appointed auditor of Sumitomo Electric Wire and Cable Works, Ltd.

For a short time in 1926 he resumed his duties as a buyer at the New York office of Western Electric and then went to London as the Company's European commercial manager. Later that year he again returned to New York and became purchasing agent, in charge of purchasing for both Western Electric and the Bell Telephone companies in such fields as wire, apparatus and construction materials, printing, paper, and office supplies.

He was appointed personnel director in 1929 and general commercial manager in 1937. In December, 1939, Mr. Eliot advanced to the post of General Purchasing Agent, in which capacity he supervises the buying job for the Bell System.

He has participated in numerous public activities. He was chairman of first community chest campaign of Englewood, inaugurated in 1933 by Mrs. Dwight Morrow, and since 1938 has been president of the Social Service Federation of Englewood. Since 1937 he has been a members of the Alumni Board of Yale University and is chairman of the Scholarship Committee of Yale Alumni Association of Bergen County. Mr. Eliot is a member of the Englewood Field Club, Knickerbocker Country Club, Englewood, and of the Railroad-Machinery Club of New York.

Miss Jane Stapleton, receptionist for Western Electric's purchasing department, greets incoming salesmen and announces them to the Buyer, Assistant Purchasing Agent or Purchasing Agent whom they wish to see. Western has received many favorable comments on the fact that Buyers and others in the purchasing department receive salesmen promptly. Almost 1,000 sales representatives pay Western's purchasing department a visit every month. If a Buyer is in conference or otherwise tied up, he gives the visiting salesman an estimate of how long he will be detained. Then the visitor may choose to wait or to make another call, as he sees fit. Salesmen from out of town, and those who have scheduled appointments, receive first consideration. Western takes great care in selecting receptionists. Courtesy is the primary requirement for a good receptionist since she is the Company's first contact with representatives of suppliers. She must also have a thorough knowledge of the department's organization.

Percy M. Marshall, Purchasing Agent for Western Electric Company since 1926, is a native of Rome, Georgia. Born September 27, 1883, he was graduated from Alabama Polytechnic Institute in 1903 with a B.S. degree in electrical and mechanical engineering. The following year he studied hydraulic, steel and concrete engineering at the Georgia School of Technology.

He joined Western Electric Company's student course in New York the next year and soon after transferred to the engineering department. During the next three years he held various positions in this department, and in 1908 took up duties in the New York shop. He became head of the production branch in 1912 and the following year moved to the Company's Hawthorne Works in Chicago, where he remained in production work until 1918. That year he transferred to the general purchasing department in New York. Later the same year he was loaned to the engineering department to head production of vacuum tubes, submarine detectors and other materials for the Army and Navy. He returned as Purchase Engineer after the Armistice and later became assistant general purchasing agent, then Purchase Supervisor, in which capacity he visited each distributing house to coordinate purchasing work.

Mr. Marshall is a member of the Interfraternity Club of New York, the Railroad-Machinery Club of New York, the Siwanoy Country Club of Bronxville. His writings have appeared in the magazine *Management Engineering* and he has a section in "Management Handbook" published by the Ronald Press in 1924.

The work of Mr. Marshall's division is divided into three general parts:

1. Buyers at 195 Broadway, under the supervision of an Assistant Purchasing Agent. These buyers are divided into groups specializing in:
 - Directory printing
 - Stationery forms, envelopes and allied printing
 - Paper and paper products
 - Office and janitors' supplies
2. Zone purchasing and supervision of distributing house buying. This work is under the direction of an Assistant Purchasing Agent, to whom the Zone Purchasing Agents report. The Zone Purchasing Agents directly supervise the buyers at the various distributing houses.
3. The clerical department, under direction of a chief clerk. The work, as indicated, covers all clerical operations necessary to carry the department at 195 Broadway. The work includes typing contracts, maintaining centralized files, keeping records, issuing information to the field and similar services.

SEPTEMBER, 1940



E. H. Hylander, Assistant Purchasing Agent in charge of buying telephone directory and all other printing, paper and paper products, and office and janitors' supplies, goes over contract terms with a visiting salesman.



T. G. Stover, Assistant Purchasing Agent, is interrupted momentarily in his conversation with two salesmen of raw materials used in the manufacture of the telephone. Mr. Stover is in charge of purchasing the major supplies and raw materials bought at 195 Broadway for Western Electric's several manufacturing plants.



Western Electric Company
INCORPORATED
195 BROADWAY
NEW YORK, N. Y.

PURCHASE ORDER NUMBER

DATE SHIP TO

SHIP VIA

PLEASE FURNISH THIS COMPANY IN ACCORDANCE WITH INSTRUCTIONS AND CONDITIONS ON REVERSE SIDE.

SHIP ON OR BEFORE

SHIP ON

NOT BEFORE

REMARKS

Western Electric Company
INCORPORATED
GENERAL PURCHASING DEPARTMENT
HAWTHORNE STATION
CHICAGO, ILLINOIS

PURCHASE ORDER NO.

INVOICE

DEPARTMENT

OF THIS COMPANY AT ABOVE ADDRESS

DATE

PLEASE FURNISH THIS COMPANY IN ACCORDANCE WITH INSTRUCTIONS AND CONDITIONS ON REVERSE SIDE.

SERVICE DEPARTMENT

BUYER

Pole line material, that is, poles, crossarms, line hardware, and items associated with their use, including tools used in installing these materials, are under continuous process of development and redesign. These changes necessitate close cooperation between Mr. Merrill's division and the development engineers of the A. T. & T. Company and the Bell Telephone Laboratories.

James J. McKenna, Purchasing Agent for Western Electric Company since 1928, was born in Charleston, S. C., October 1, 1881. After attending high school there, he began his business career with the American Sight Seeing Car and Coach Company in his home town. He joined Western Electric in 1902 as a clerk in the manufacturing department in New York.

After gaining experience in various manufacturing positions during the succeeding nine years, he was appointed head of shop stores in 1911. Two years later he became head of the clerical and production branch of Western Electric Co. Ltd. in London, at that time a subsidiary of Western Electric. He remained abroad until 1919, when he left the Company to join Firestone Tire and Rubber Company in Akron, Ohio. Within the year he returned to Western Electric as head of the buying division in Chicago. In 1921 he advanced to Assistant General Purchasing Agent. Two years later he became superintendent of production in the manufacturing department at Hawthorne. In 1928 he assumed his present position.

Charles A. Merrill, Purchasing Agent of Western Electric Company since 1927, was born in Shelburne Falls, Massachusetts. After graduating from Amherst College in 1897, he worked two years as a bank teller before joining Western Electric as a cashier's clerk and paymaster at its Hawthorne Works in Chicago.

In 1901, when the Company's distributing house in Philadelphia opened, Mr. Merrill became its cashier and assistant treasurer. Subsequently he held various positions in the treasury and accounting departments in the New York distributing house, and in 1917 he was appointed Service Manager of the general purchasing department. Mr. Merrill advanced to the position of Assistant Purchasing Agent in 1918 and seven years later became Purchasing Agent.

He is a member of the University Club, the Railroad-Machinery Club of New York; and the Essex County Country Club, New Jersey. Several articles dealing with problems of purchasing have appeared under his name from time to time.

Mr. Merrill's division purchases supplies for inside and outside telephone plant, and non-ferrous metals for manufacturing operations. Here again the work is divided into specialized groups. There are the following general classifications:

1. Tools and associated equipment
2. Poles, crossarms and other wood products
3. Pole line hardware, strand, and other ferrous articles
4. Underground construction material
5. Central office and rest room equipment and furnishings
6. Automobiles, bodies and equipment
7. Copper, lead, zinc, antimony, etc.

THIS COPY FOR GENERAL PURCHASING DEPARTMENT

DATE

AUTHORIZATION

G.T.S.A.

NO.

NO. OF SHEETS

SHEET NO.

AUTHORIZED BY SUPPLIES SERVICE MANAGER

QUANTITY AUTHORIZED	UNIT	ARTICLE	SPECIFICATION BRANDS	PERIOD COVERED

INSPECTION REQUIRED:

CLASS OF CONTRACT:

STANDARD PACKAGE:

USE SERVICE INSTRUCTIONS APPLYING ON CLASS OF CONTRACT NOTED ABOVE.

THE FOLLOWING STANDARD CLAUSES OF THE SUPPLIES SERVICE DIVISION ARE TO BE EMBODIED IN OUR CONTRACTS FOR THIS MATERIAL.

CLAUSE NO.

SEE OTHER SIDE FOR CONTRACT INFORMATION.

CORRECT

APPROVED

E. H. Hylander, Assistant Purchasing Agent, started his Bell System service with the American Telephone & Telegraph Company on form standardization work in 1917. Transferred to Western Electric Company in 1923. His entire experience with the Western has

R. C. Gleim, Assistant Purchasing Agent, started with Western Electric in 1905. His job was inspec-





Lodge pole pine telephone poles here are being stored in the yard of a Western Electric supplier in Laramie, Wyoming, ready for shipment to telephone companies when called for.

The covered unloading dock at the Detroit distributing house with a capacity for four freight cars, where incoming materials are unloaded to a conveyor for distribution to various places in the warehouse.

ting materials at suppliers' manufacturing plants to see that these materials conformed to specifications. He held supervisory positions in connection with this inspection work at New York, Chicago and on the Pacific Coast. He entered the purchasing department as Pacific Coast Purchasing Agent in 1930 and was promoted to Assistant Purchasing Agent at headquarters in 1936.

C. E. Marhaver, Works Purchasing Agent, (Hawthorne Works—Chicago), started with the Company in the manufacturing department in 1911 at the Hawthorne Works. He transferred in 1916 to the merchandise department at the same location and to the purchasing department as assistant buyer in 1917. Appointed buyer in 1919, Mr. Marhaver was later transferred to the Kearny plant as Works Purchasing Agent in 1926. In 1930 he transferred to the Hawthorne plant as Works Purchasing Agent.

W. H. Bocock, Works Purchasing Agent (Kearny Works—New Jersey), started with Western in 1912

as a service clerk in the Chicago distributing house and continued there until 1920 when he was appointed buyer at the Chicago house. Transferred to the general purchasing department as a buyer in 1923, he was appointed Assistant Purchasing Agent in 1928. He transferred to Chicago in 1929 to start zone purchasing activity and went in 1930 to the Kearny plant as Works Purchasing Agent.

K. C. Gernon, Works Purchasing Agent (Point Breeze Works—Baltimore), started his Company career as a clerk in the manufacturing department at Hawthorne Works in 1909. He held various positions as draftsman, section chief on apparatus drafting, department head on central office apparatus and switchboard cost studies. During 1926 and 1927 he was a member of the engineer of manufacture organization working on cost realization and cost surveys. In 1929 he was transferred to Western's Kearny plant as a division chief, handling the accounting, results and service divisions in the manufacturing department. At the end of 1929 he was appointed Works Purchasing Agent for the Baltimore plant.

A. E. Peck was employed by Empire City Subway Company from 1902 to 1920 as an accountant, storekeeper and Purchasing Agent. He entered Western Electric as buyer in 1920 and was appointed Reclaimed Material Sales Manager in 1929.



General Principles

Purchases are made by general, zone or local contracts, or by individual order. There are a number of different types of contracts. The purchasing method used, period covered, and others factors, may vary depending upon general market conditions, conditions surrounding each item as to quantity needed, sources of supply, location of anticipated demand and the necessity of insurance against emergency, such as the hurricane in 1938.

Continuous studies are made covering all phases of supply and distribution. These studies may be made at the company's headquarters in New York, using information which can best be furnished by

Works Purchasing Agents or Zone Purchasing Agents because they are close to local conditions or the studies may be conducted by the Works or zone organizations under the direction of headquarters. The continuing objective is to locate sources of supply that are by geographic location and equipment in a position to give the desired quality and service at an attractive price.

Buying to supply the vast and varied needs of the Bell System is a job for specialists. Each buyer in Western Electric must know not only where he can obtain the commodities he is charged with supplying, but he must know thoroughly the market in which he buys, the factors that control price, quality and availability. He must have a knowledge of how the Bell System uses the products he purchases; what quality is demanded and where delivery will be made. The coordinating of all these relevant facts demands continuous study and careful planning.

Purchasing is handled, of course, in close cooperation with the manufacturing department and the sales department. This latter group has charge of distributing through its nationwide chain of supply centers the material and equipment necessary for constructing and maintaining the Bell System's vast network of telephone communication. The manufacturing and sales groups establish estimates of future requirements for their respective operations; determine where and when these materials will be needed.

those to be bought for Bell System telephone companies in completed form from outside sources. From these estimates the manufacturing department, after taking into consideration stocks on hand and commitments, sends to the purchasing department an estimate of its raw material requirements and gives purchase authorization for those requirements. The sales department gives the same information for materials bought outside.

In this way the sales department controls the investment in inventory and stores at the distributing houses and in the merchandise department, while the manufacturing department controls investment at the various company plants. If, in the opinion of the purchasing department, it seems desirable from a price or service standpoint to make commitments which will necessitate investments beyond the normal, the matter is discussed in conference and a joint decision is reached.

Purchasing Policy

In its purchasing policy, the Western Electric Company recognizes a dual responsibility:

1. To buy at prices which are fair to the Bell System and hence to the telephone user.
2. To buy at prices which are fair to the seller, so that he can continue as a dependable source of supply at all times, whether normal or emergency.



A section of the Detroit distributing house where hardware and heavy construction materials are stocked ready for shipment.



Another section of the Detroit house where more than 4,200 items of broken package stock are stored on 25 racks along a conveyor line.

Armed with this information, the purchasing department establishes when the goods shall be bought, where and what period of time shall be covered. It also determines whether the purchase shall be made by a definite purchase order, or on contract. Generally speaking, if the purchase covers material to be delivered to definite points in definite quantities, the purchase is made by a purchase order. If, however, a number of locations will use the material, the purchase is covered by a contract, and shipments are made on "shipping orders" applying against contract.

Stores and inventory control are also achieved by this procedure. The estimated sales budgets include materials to be manufactured by Western Electric and

Of course, the purchasing policy is not merely on opinion of one man or two men. It is determined through scientific study of general business conditions of the Bell System and intensive studies of specific commodities.

Western's purchasing policies are the result of years of continuous study of buying for the Bell System. These buying methods are constantly under scrutiny and discussion in order to provide for development of new policies to meet changing conditions either in the industrial world or in the System.

When purchasing commodities in such quantities and varieties as Western does, the problem of supply is a real one. In buying any given commodity the

purchasing department first investigates potential sources. Then it selects by a process of elimination the suppliers it will utilize. Careful consideration is given to the supplier's financial standing, labor and raw material supply, his ability to meet specification requirements, his manufacturing schedules and plant hazards, such as the liability to fire. Thus, from a number of possible suppliers, the department solicits quotations. On the basis of these bids, purchases are awarded with due regard to the supplier's ability to give service. Continuous attention is given to the development of new suppliers, either to take care of increasing needs, to provide for better distribution, or to obtain lower prices.

In general, Western's purchasing policy embraces these factors: Quality, Service and Price.

Quality

Standardized quality, in the Bell System, is a primary consideration, equally as important as obtaining a satisfactory price or insuring delivery of necessary supplies. Western Electric's engineers and the engineers of Bell Telephone Laboratories, the research and development organization owned jointly by Western Electric and A. T. & T. Co., are constantly working on the problem of developing better materials. When the chemical, physical, electrical or mechanical properties of these materials have been determined, a specification covering them is prepared and submitted to the purchasing department for suggestions as to what suppliers are available. Then the specifications go to the suppliers for their comments. After these comments have been garnered and noted, purchases are made in conformance with the specification.

Western does not rely upon the suppliers' ability to give the Company what he thinks it wants, or what he believes will be satisfactory. The Company knows what it needs; and its specifications, supplemented by inspection, make sure that the needs are fulfilled. There are three distinct advantages of specifications as looked upon from the standpoint of scientific purchasing for the Telephone System.

First, the standard of quality is definitely established. This quality is directly related to the purpose which the material is to serve. Such a specified quality is a contributing factor in obtaining fair prices on the material best suited to the System's particular needs.

Secondly, because of the defined quality, specifications may be sent to suppliers with invitations for bids. Each supplier quotes on the same material and the buyer can compare these prices in the light of service, since he knows that the factor of quality has been determined.

In the third place, standard specifications for quality permit centralized and quantity purchasing. By combining requirements of similar materials to be used by the many telephone companies, Western is able to purchase in quantity, thereby contributing to lower manufacturing costs and selling expenses. The result is lower prices.

Service

Service is an important consideration. By service is meant the receipt of material when required, so that sufficient stocks for normal operation or any emergency can be maintained at the minimum investment. To do this, Western Electric so distributes its sources of supply that there can be no serious delay resulting from fires, earthquakes, floods, or other catastrophes. The suppliers are selected for their re-

liability, so that manufacturing schedules are maintained and promises of delivery are kept. But on the other hand, Western does not expect the impossible. Hence, requirements are determined far in advance so that negotiations for materials at favorable buying levels can be made and necessary manufacturing and delivery schedules provided.

Price

The third consideration is price. The price paid for material, while of great importance, is but one of the three fundamental factors of Western's purchasing. The price should be the lowest obtainable, consistent with quality and service. To purchase each commodity economically, Western's purchasing group studies fundamental factors that control price movements; keeps close track of the cost of the raw material, labor and over-head expense necessary to produce the material and still allow the supplier a reasonable profit. Three of the chief factors that aid Western in obtaining fair prices are: buying in quantity; buying at the correct time, that is, providing the proper coverage so that operations in the suppliers' plants are not hampered; and buying through competitive bidding. Oftentimes competition must be built up in the supplying of certain items used especially in telephone communication.

Variety of Purchases

Since the purchasing department of Western Electric buys not only raw materials and supplies for its own manufacturing plants, but also the materials and supplies for constructing and maintaining the Telephone Companies' plant, the materials handled cover literally thousands of items of every kind and description. The department buys, for example, copper wire bars by the hundreds of tons; brass paper fasteners weighing only a few ounces per thousand; telephone poles and toothpicks. It purchases aspirin tablets by the thousands, auto trucks, cable hawsers and silk thread; telephone directory paper and carbon paper; rubber stamps and derricks. In a recent year all these hundreds of items were purchased from 13,000 different sources in 1,700 towns and cities throughout the United States.

Setting Specifications

So that the materials purchased are best suited to the function they are to perform, the larger part by dollar value is purchased under definite specifications. These specifications are developed, individually or in coordination, by Western Electric's manufacturing department, the operating and engineering department of A. T. & T. and Bell Laboratories. The manufacturing department of Western and A. T. & T.'s operating and engineering department issue specifications for materials they may use in their operations. The Laboratories draw specifications for other equipment and materials for the Bell System. The usual procedure, which may be varied as occasion demands, is:

(a) The group responsible for issuing any given specification gives the purchasing department an overall picture of the results desired from the material or piece of equipment to be purchased.

(b) The purchasing department selects respective suppliers who are best suited to meet economically the requirements. If necessary, it also arranges a meeting with suppliers' representatives. Sometimes it arranges visits by purchasing department men or the design engineer to the plants of possible suppliers.

(c) Preliminary specifications are written and submitted to the purchasing department.

(d) The purchasing department sends these preliminary specifications to a selected list of suppliers for comments.

(e) These comments are passed by the purchasing department to the division that made the specifications originally.

(f) Final specifications are then drawn up and sent to the purchasing department and to organizations which will use the material ultimately.

(g) Specifications are then used in making the purchases.

Requisitions and Orders

Requisitions for materials are of two general classes: (a) those issued by Bell System telephone companies, and (b) those issued at Western's plants or distributing houses for materials needed.

(a) Each telephone company, and each department of the respective telephone companies, issues requisitions for materials needed to carry on the business,

		GENERAL CLASS OF MATERIAL										NAME OF SUPPLIER	
		1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	MAIN ADDRESS	
8	BOSTON											Western Electric Company INCORPORATED GENERAL PURCHASING DEPARTMENT 195 BROADWAY NEW YORK DATE	
	WEST HAVEN												
	NEW YORK												
	BROOKLYN												
	NEWARK												
	PHILADELPHIA												
	PITTSBURGH												
	WASHINGTON												
	ATLANTA												
	LOUISVILLE												
	JACKSONVILLE												
	NEW ORLEANS												
	DETROIT												
	CLEVELAND												
CINCINNATI													
INDIANAPOLIS													
CHICAGO													
MILWAUKEE													
OMAHA													
DES MOINES													
MINNEAPOLIS													
ST. LOUIS													
DALLAS													
HOUSTON													
KANSAS CITY													
OKLAHOMA CITY													
DENVER													
SALT LAKE CITY													
SAN FRANCISCO													
LOS ANGELES													
SEATTLE													
PORTLAND													
HAWTHORNE													
KEARNY													
POINT BREEZE													
QUEENSBORO													
195 BROADWAY													
TOTAL													
G. P. 404 (6-32)													

Contract includes clauses: 1A, 3B, 4, 5, 8, 9A, 12, 13, 17D, 24, 25 & 29
Terms: Net "H"
F.O.B.: Cars, City, State
PRICE:

Container	Standard Package Cans per Carton	Price Per Carton
1/2 Pt. Can	24	\$ XXX
1 " "	24	XXX
1 Qt. "	12	XXX
1 Gal. "	4	XXX

No extra charge for packing.

Period: 7/1/39 to 7/1/40

Western Electric Company
INCORPORATED
GENERAL PURCHASING DEPARTMENT
195 BROADWAY
NEW YORK

CONTRACT NUMBER
SHEETS
SHEET NO.
DATE

7

We agree to purchase and you agree to sell in accordance with the terms and conditions herein stated

Material

Price

F.O.B.

Title

Terms

Specifications

Inspection

Routing of Shipments
You agree to follow such routing instructions as we may furnish you

Shipping Orders
This is not a shipping order. Shipping orders applying on this contract will bear both the shipping order and contract numbers. Invoices and shipping papers must be sent to the house issuing shipping order and must refer to both shipping order and contract numbers. Payment will be made by the house issuing shipping order

Guaranties
By accepting this contract you hereby warrant that the material to be furnished hereunder will be in full conformity with the specification, drawing or sample (and if the material is to be installed by you, that it will function properly when installed) and agree that this warranty shall survive acceptance of and payment for the material, and you agree to save us harmless from any loss, damage or expense whatsoever, including attorneys' fees, that we suffer as a result of your failure to abide by such warranty. We reserve the specific right to have rejected material replaced by you or not at our option and at the purchase price stipulated in the contract. Material rejected shall be returnable to you for full credit at the price charged, plus transportation charges. We reserve the further right to accept a part of any shipment which fulfills our specifications and reject any part which does not fulfill such specifications and consider the contract breached to the extent of the amount of the rejected material.

Other Conditions
Ship as ordered, bill when shipped, except as otherwise herein provided
G. P. 404 (6-32)

Contract includes clauses: 1B, 3D, 4, 5, 8, 9B, 12, 17C, 20C, 22B, 23A, 24, 25, 26 & RD
Terms: Net "H"
F.O.B.: Cars, City, State with delivery to our warehouses in City and City, State at no extra charge.
PRICE: XXXX
No extra charge for packing.
BILL SYSTEM STANDARD
FOR AVE., CHGO., CINC., CLEV., DAL., DENVR., DET., HAV., ILS., K.C., MIL.,
MIN., OMA., PHILA., PHS., PT. A., ST. L., WASH. CITY
THIS CONTRACT TERMINATES AND SUPERSEDES CONTRACT # 23768 C
City
State
SUPPLIER
CLOTH, WIRE (SUGAR LINE) 2 34753 C

Period: 10/1/38 to 10/1/40
Spec. C-2k

whether for printed forms, telephone poles, or any one of the many thousands of items the Western Electric Company is in a position to furnish. Separate instructions are maintained in the telephone company for the approval of these requisitions, and need not be commented upon here.

Western Electric maintains one or more distributing houses to serve each telephone company in the Bell System. Each company, therefore, has a designated distributing house to which requisitions are forwarded. In other words, telephone company requisitions are not sent to Western headquarters or plants.

Upon their receipt at the distributing house, requisitions are turned over to the stock maintenance department, where an editor designates by symbol the location from which the various items may be supplied. Requisitions may call for shipments from stock in the distributing house, stocks at Western's works, or goods manufactured there to order. Requisitions may go to the supplies service division at headquarters for application against a definite commitment contract, may be placed directly against a contract, or handled as a local purchase by the buyer at the house.

Special forms are typed up for materials to be shipped from the various locations, except for those that come from suppliers where Form SD-500 (Figure 1) is used. Shipments are then made direct to the ordering locations by the most economical transportation methods. Billing is rendered by the suppliers to the distributing houses, where the invoices are checked for correctness, and final billing is rendered to the customer.

(b) The principal raw material items required for manufacture of products are anticipated in advance of their need. Consequently, contracts or special purchases of these materials are made and the materials placed in storerooms within the respective plants. Requisitions are placed against these stocks as manufacture progresses, and supplies are disbursed by the stock clerk with appropriate notation for the maintenance of costs of materials against a specific job. The stock clerk also watches the quantity of various items on hand so that he may notify the proper people in the organization when stocks are low and need to be re-ordered.

Other requisitions are issued for materials not carried in stock, and these are referred to the Works purchasing department, where the items are applied against contracts or special purchases are made.

Substantially the same routine is employed at points where material is ordered for the company's own consumption in the repair shop, warehouse or office.

The standard purchase order (Figure 2) is a ten-part fanfold form. The original is sent to the vendor, along with the first two copies. One of these is the "Promise of Delivery," to be returned as soon as possible with information regarding the proposed shipping dates. The other is a "Notification of Shipment," to be mailed on the date the shipment is actually made, showing how shipment is being made, and whether it is in complete or partial fulfillment of the order. If it is a partial shipment, a delivery promise for the balance is given on this form.

The seven carbon copies which carry the transaction through the company's own routine are: Purchasing Department Annual Report Copy, Voucher Department Reference Copy, Inspection Department Copy (2), Purchasing Department Reference File Copy, Material Tracing Record, and Traffic Department Copy. These copies are on thin paper and carry only the printed heading that identifies the purpose of each

(also distinguished by different colors of ink), except for the Material Tracing Record, which is ruled on the reverse side to show a complete record under the headings: Date, Correspondence and Promises of Delivery: Shipped—Notice, Date, Quantity, and Total; Received—Total, Quantity, and Date.

Contracts and Records

Reference has already been made to the purchase authorization which is sent to the purchasing department by the Supplies Service Manager upon receipt of information from the manufacturing or sales departments regarding needed materials. This form is shown in Figure 3. A printed block on the reverse side shows a recapitulation of open contracts for such materials—the supplier's name, number and expiration date of the contract, and whether service conditions have been satisfactory or unsatisfactory. The authorization is in effect an order on the purchasing department for the procurement of certain items, and specifies the article, the quantity authorized, the period covered, whether inspection will be required, the class of contract, the standard package, and standard clauses to be incorporated in the contract of purchase. Like an order, it requires an acknowledgment, made on one of the carbon copies (Figure 4), assuring the Supplies Service Division that the purchase will be negotiated within 45 days. If for any reason the purchasing department questions the authorization, or will require a longer time to consummate the purchase, this information is set forth in detail. Also, as in the case of an order, there is a notification copy to be returned with a copy of the contract itself, indicating the supplier's name, and number and date of the contract.

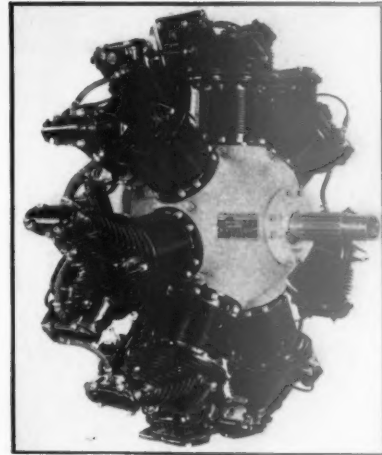
Before making the actual purchase, bids are tabulated and compared by the purchasing department. The form for this purpose (Figure 5) not only cites the quotations on the particular transaction, but presents other comparative data of value in checking the purchasing performance. It shows, for example, not only the approximate value of the individual purchase, but the annual value of requirements of the material. It also records the lowest previous price, the price a year earlier, and the price on the last purchase, with a space for the estimated saving made on the purchase in question.

The contract form itself (Figure 6) is relatively simple, uncomplicated by a mass of fine print. Special conditions applying to any given contract are taken care of by various standard clauses of the Supplies Service Division, any of which may be incorporated in the contract as required.

When the contract has been made, a record of it is provided for each of the buyers who may have occasion to order against it. This record (Figure 7) is in the form of loose leaf sheets, punched for insertion in a binder so that the name of the item on the lower edge of the sheet provides a visible index to materials so covered. This record, in brief, condensed form, embodies all the essential ordering information, arranged for quick and easy reference.

In addition to the reference file of purchase order copies, a summary sheet (Figure 8) is maintained for posting all contract and non-contract purchases from suppliers, classified according to the various works and distributing houses. A separate sheet is kept for each supplier, covering all purchases of materials within a general class over a ten-year period. It gives the purchasing department necessary detailed information regarding the volume and distribution of purchases.

The new Warner "Super Scarab" which develops 165 hp.—2100 r.p.m. and only weighs 332 lbs. Nickel steels are largely specified, because of their dependability and high strength-weight ratio.



THE PURCHASING AGENT

BUYS ALLOY STEEL

Alloy steels have developed from the specialty stage to a tonnage product not only because of technical advantages but by demonstrated long-run economies

By C. M. SCHWITTER

The International Nickel Co.

NO one buys alloy steel unless the purchase saves him money, or unless it permits the manufacture of equipment which otherwise could not function. An obvious example of the latter case is the nickel steel chain (Figure 1) with which the Lord Kelvin, cable-laying boat operated by the Western Union Telegraph Company, was equipped in order to drag a ten ton cable plow over the ocean bed. The length requirement for this chain, 4,200 feet, was such that if it had been forged of plain carbon steel it might have broken of its own weight. The use of a nickel alloy steel not only made the extreme length of chain possible but provided a margin of extra strength for good measure.

The modern aircraft engine (Figure 2) is another adaptation of alloy steels to the creation of a complex mechanism that otherwise would still be in the diaper stage of development. Certainly an aircraft motor made entirely of conventional carbon steels would be a clumsy, overweight job that very likely would require a change of valves and highly stressed parts after every flight, assuming that such parts lasted long enough to bring the pilot safely down to earth, and also assuming that the engine would generate enough power to lift its own weight off the ground in the first place!

It is not always so obvious that alloy steels can save the purchaser money when properly applied, that indeed they must always do so in order to exist as a tonnage product rather than a specialty. By far the largest market for alloy steels lies, not only in such fields as the foregoing illustrations, but in applications where they can prove themselves cheaper in the long run than carbon steels, despite their initial handicap of higher first cost. This saving may be realized in longer life for highly stressed parts or those subject to excessive wear, in weight economies, in reduced fabricating costs, or in other equally advantageous ways.

The High Strength Structural Steels

Presumably inspired first by aircraft development, designing engineers have become as weight-conscious as a dowager on the far side of forty. In transportation industries the saving resulting from decreased weight is readily apparent, since a pound pared off dead weight is a pound increase



Baldt "Di-Lok" nickel steel chain (left) used on the Lord Kelvin for "plowing" the ocean bottom in laying cables, as compared with standard carbon steel anchor chain (right).

CUTTING DEAD WEIGHT

These three illustrations show how dead weight can be reduced in various industries through the use of nickel alloy steels. →

in pay-load capacity. The only reason current design programs were not initiated years ago is the limitations of ordinary carbon steels, which require a generous factor of safety and have a relatively low strength-weight ratio.

One of the most important alloy steel developments of the past decade has been the creation of a series of high strength, low alloy structural steels which permit the designer to cut dead weight drastically without impairing the strength of the structure. This new series of steels has contributed much toward reduction of dead load in such units as power shovels, stream-lined trains, freight cars, street cars, road machinery, trucks, trailers, and other mechanized units. (Figures 3, 4, 5) The steels contain both nickel and copper as basic alloying elements. Nickel ranges from .25% to 2% and copper from .25% to 1.25%, with small amounts of phosphorus, chromium and molybdenum present (under .25%). Two grades, containing .10% carbon and .20% carbon respectively, are available in each type.

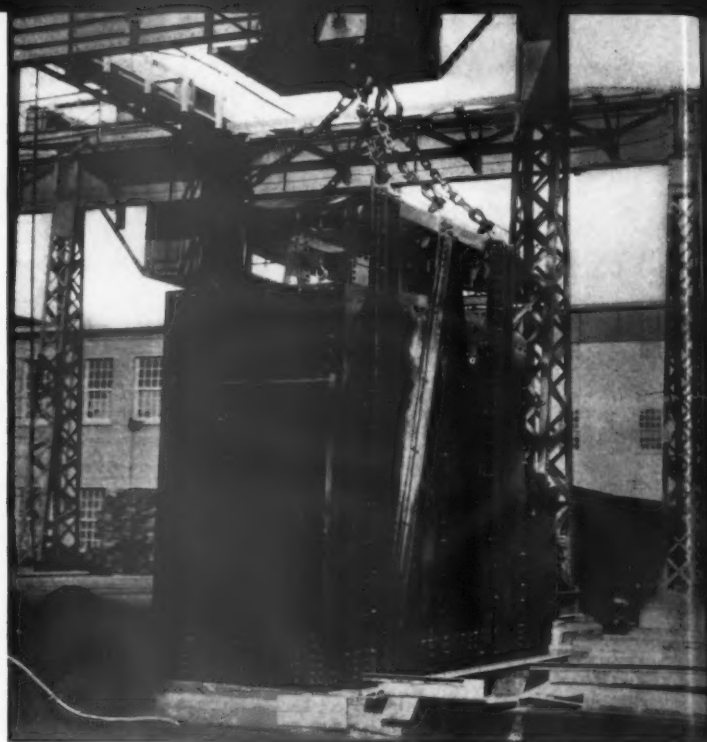
This group of steels is sold under proprietary trade names such as R. D. S., Yoloy, Hi-Steel, HT-50, Mayari-R and others, each steel company having its own trade name. They are available in sheets of 20 gauge in some types up to 3/4" thick, plate in other types. Comparative as-rolled physical properties of 1/4" plate of .20% carbon steel and .20% carbon alloy steel are approximately as follows:

	Tensile Strength P.S.I.	Yield Point P.S.I.	Elongation % in 8"
Plain carbon structural ..	55,000	27,000	28%
Low alloy type	94,000	69,000	27%

Because of the ferrite strengthening induced largely by the nickel content, this type of steel lends itself well to cold forming and welding with a minimum tendency towards cracking. Better resistance to abrasion, and improved corrosion resistance when exposed to the atmosphere and other mildly corrosive mediums are also characteristic of these steels.

Another group of structural steels available are the straight 2 1/4, 2 3/4 and 3 1/2% nickel steels used in bridges and similar engineering structures as well as in railroads, petroleum refineries, and other heavy equipment industries. (Figure 6)

While these low alloy, high strength as-rolled steels partly offset higher unit cost by requiring less material by weight than plain carbon steels, savings are also produced by other less obvious means. For instance,



20% weight saving with 15% greater capacity was effected in this mine skip installed at the International Nickel Co.'s mines. Plates and shapes are 3 1/2% nickel steel, while the forged and cast members are 2 1/2% nickel steel.

one organization engaged in shipping their product by rail found that, by employing alloy structural steel, weight was reduced 20% and shipping costs cut proportionately. Another company realized considerably increased life in the drive mechanism of their product because of reduced wear and tear when employing the stronger material, while still another organization eliminated a costly annealing process necessary with plain carbon steel plates by changing to a low carbon high strength alloy steel which did not require this treatment after fabrication by welding.

Instances have been reported where gasoline trucks, when weighing more than 3 pounds per gallon of gasoline carried, paid a much higher tax than those in which the weight-capacity ratio was below this figure. Accordingly the special high strength nickel-copper plate steels were employed to reduce the trucks to the desired weight, thus saving the truck operator substantial tax sums each year, and serving as the principal selling point in some states. In railroad applications car weight reductions up to 15% have been made, permitting a larger pay load per unit of hauling costs. Some plants have chosen to replace large steel castings with an all-welded plate construction and have reported savings both in pattern costs and the smaller amount of metal required. Weight reductions of 35-40% on truck dump bodies, and an over-all reduction of 16% in the fully assembled weight of trucks has been accomplished, and on a power shovel originally weighing 150,000 pounds, a weight saving of 20,000 pounds was achieved by redesigning to take advantage of the low alloy, high strength structural steels. Similar trends are developing in other industries too numerous to detail separately.

Heat Treated Alloy Steels

The wide variety of so-called "engineering" alloy steels, as differentiated from the structural steels, depend largely on heat treatment for full realization of their superior properties. Plain carbon steels have



Through using "Hi-Steel" for structural members and nickel-chromium-molybdenum steel for forged parts, the Harnischfeger Corp. has reduced the weight of their power shovels 28%.



The bodies of these garbage trucks are made of "Yoloy" steel produced by Youngstown Sheet & Tube Co. Along with reducing the weight this steel offers excellent corrosion resistance, so necessary in this service.

many shortcomings in this respect. Most important defect is their shallow hardening tendencies, which, while not particularly manifest so long as small section thicknesses are involved, severely handicap these steels for many important applications. The presence of such alloying constituents as nickel, chromium, and molybdenum increase depth hardening and minimize the hardness gradient from surface to core. Since the most desirable combination of strength, ductility, and toughness is obtained by quenching steel to produce full hardness, followed by tempering to the desired level of properties, the importance of depth hardening is manifest. The following figures illustrate the difference in properties developed by nickel-chromium-molybdenum steel of the S.A.E. 4340 type and plain carbon S.A.E. 1040 steel, both suitably quenched and tempered at 800° F. The poor order of properties of the carbon steel in the heavier bar sizes is significant:

S.A.E. 4340					
Bar Size	Tensile Strength P.S.I.	Yield Point P.S.I.	Elongation	Reduction of Area	B.H.N.
1"	212,000	200,000	14%	48%	430
2"	209,000	196,000	12%	42%	420
4"	195,000	176,000	9%	38%	385
S.A.E. 1040					
1"	140,000	105,000	14%	45%	280
2"	115,000	82,000	15%	45%	230
4"	106,000	76,000	14%	43%	195

Another fundamental effect of such alloying elements as nickel is to impart better toughness, or resistance to impact, at any given strength level. Fatigue strength, or resistance to failure by repeated stresses in the presence of stress concentrations is also considerably improved in the nickel alloy steels. These stress concentrations are usually caused by sharp changes in section such as occur at the root of a thread or at the junction of the head of a bolt with the shank. While proper design with generous radii

at fillets will often eliminate zones of stress concentration, such design is not always completely practicable.

The improved service properties of alloy steels can be utilized in many ways. When used in place of carbon steel parts that ordinarily break or wear out quickly, the higher initial investment in alloy steel is more than justified by longer life, reduction in servicing and replacement costs, and elimination of costly delays in production schedules. Gears, cams, levers, shafting and piston rods are among the most popular applications of alloy steels in which their improved properties are a real economy in the long run. Also, by redesigning to take advantage of improved properties, some of the important economies achieved by savings in weight may be realized, as described in the discussion of structural alloy steels.

Closely associated with the fundamental improvement in depth hardening characteristics is the ability of alloy steels to respond to milder quenching mediums such as oil. The drastic cooling which results from quenching carbon steels in water or brine produces severe strains which may crack or distort the piece. The lower hardening temperatures associated with nickel alloy steels in particular operate also toward reducing strains developed by quenching.

Elimination of cracking as a result of heat treatment produces marked economies in the shop, by reducing the number of rejects. Minimized distortion is important when parts are machined before heat treatment or receive only a finishing operation after heat treatment. With gears, for example, it is often customary to rough machine the blanks, heat treat, and then machine, shave, grind or lap to finished dimensions. In such cases, the amount of stock removed in the final operation is largely determined by the over-size tolerance allowed for distortion. Obviously, the use of such steels as the nickel-molybdenum S.A.E. 4,600 types, noted for their low distortion characteristics, effects appreciable savings in finishing operations.



To meet the need for continued precision, wear resistance and high strength, nickel alloy steels are widely used in the construction of machine tools. The Cincinnati Milling Machine illustrated, alone has 275 parts made of nickel-chromium steel.

Other types of savings are frequently effected through the medium of machinability, particularly where it is necessary to precision machine the teeth and bore of large oil hardened gears at a Rockwell hardness of "C" 38-41. Carbon steels which respond only to very light cuts under greatly reduced speeds and feeds, sometimes accompanied by a broken tool, may be replaced by certain types of alloy steels which are not only stronger but will machine with greater ease at these higher hardnesses, resulting sometimes in a saving in machining costs which more than offsets the additional steel costs. Recent trends are to employ nickel-molybdenum or nickel-chromium-molybdenum steels of the S.A.E. 4640 or 4340 grades for this type of application, since both steels have machinability



The San Francisco-Oakland Bay Bridge, largest structure of its kind in the world, contains 3680 tons of $3\frac{1}{2}\%$ nickel steel in the forms of anchor plates and structural shapes. The use of this steel reduced dead load stresses to within practical limits.

ratings 20 to 25% higher than other alloy steels at the higher hardness levels. Truck and tractor axles of S.A.E. 4340 are now splined at 338-412 Brinell, to avoid the necessity for re-heat treatment of the splined end after machining. This practice eliminated cracking of the splined end in the quenching operation and furnished a precision cut job of superior craftsmanship.

One large manufacturer found that, by adopting an alloy steel for shafting which was stronger than the grades being used, and which could be machined with equal ease at 50 points higher Brinell hardness, shaft failures due to under-design were completely eliminated. The new steel made it unnecessary to increase the size of the parts, a practice which would have

Table 1
REPRESENTATIVE APPLICATIONS OF
NICKEL ALLOY STEELS IN MACHINE TOOL CONSTRUCTION

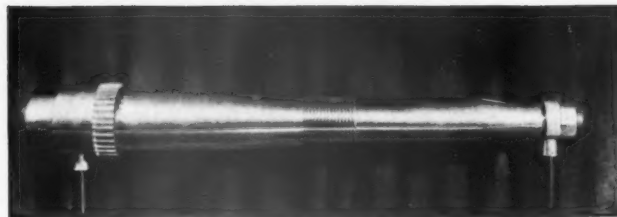
FROM "NICKEL IN THE MACHINE TOOL INDUSTRY," by J. W. SANDS AND D. A. NEMSER, METALS AND ALLOYS, SEPTEMBER AND OCTOBER, 1939.

Description of Part	Chief Service Requirements	S.A.E. Steels Employed	Heat Treatment
Anti-Friction Bearings	Wear resistance, high compressive strength	4615, 3312	Case hardened
Bolts and Studs	High strength, ductility, toughness . .	3135, 3140, 4640, 2330, 2340,	Oil quenched and tempered
Cams	High resistance to wear and spalling .	3115, 4615, 2315, 3312, 2515, (See note 1) 3150, 4640	Case hardened Oil quenched and tempered Flame hardened
Chucks			Case hardened
Jaws and Face Plates	Wear resistance, strength	4615, 3312, 2515,	Oil quenched and tempered
Pins, center plugs, etc.	Strength and toughness	3140, 4640	
Clutch Parts	Wear resistance, toughness	3250, 2350, 4340, (See note 1) 4615, 2315, 3312, 2515	Oil quenched and tempered Case hardened
Collets and Feed Fingers	Wear and fatigue resistance	4620, 2320 (See note 1)	Case hardened Oil quenched and tempered
Gears	Wear resistance, strength and toughness	3140, 3150, 3250, 2350, 4640 3130, 3140, 4640 3115, 4615, 2315, 4320, 3312, 2515 3140, 4640, 2340, 4340	Oil quenched and tempered after machining Oil quenched and tempered before machining Case hardened Flame hardened
Guides	Wear resistance, high strength	4615, 2315, 3312 (See note 1)	Case hardened Oil quenched and tempered
Lathe Tool Holders	Strength and toughness	3140, 4640, 3240, 2340, 4340	Oil quenched and tempered
Lead Screws	Wear resistance, toughness	3140, 3240	Oil quenched and tempered
Milling and Boring Cutter Bodies . .	Strength and toughness	3140, 4640, 3240, 2340, 4340	Oil quenched and tempered
Bodies With Pilots	Wear resistance, strength and toughness	3115, 2315, 3312	Case hardened
Shafting	Torsional strength, toughness	3140, 3150, 2340, 2350, 3240, 3250, 4340	Oil quenched and tempered
	Resistance to wear and galling torsional strength	3115, 3120, 4615, 2320	Case hardened
Spindles	Torsional strength, toughness	3140, 4640, 3240, 2340, 4340	Oil quenched and tempered
Spindles (contd.)	Resistance to wear and galling, torsional strength	3115, 4615, 2315, 3312, 2515	Case hardened
Worms	Wear resistance, strength toughness .	4615, 2315	Case hardened

Steels mentioned are arranged approximately in order of increasingly severe service. Size is also very important as heavy sections will require higher alloy contents to insure optimum response to heat treatment.

Note 1—High carbon nickel-chromium and nickel-chromium-molybdenum steels are also used in these applications.

Shaft machined at 477 Brinell. This shaft was turned, milled, key seated, drilled and threaded at 477 Brinell hardness. It is made of Ryerson's "H.T.M." nickel-chromium-molybdenum steel.



meant complete redesigning, with an investment of over \$50,000 in jigs and fixtures.

Savings may be effected by adopting alloy steels which lend themselves to simpler and less expensive heat treatments. This is particularly true of alloy carburizing steels which may be direct quenched from the carburizing temperature. Frequently by adopting this practice scrap losses due to distortion are cut to a minimum because of the simplified heat treating procedure. The stronger direct quenched steel may also reduce failures in the field and thus lower service and replacement costs. Service department records sometimes hold the key to such special steel problems. Both direct quenched S.A.E. 3115 and 4620 steels have gained favor for gears in the past few years because of these characteristics.

Availability and Purchase of Alloy Steels

With the growth of the automotive industry and the formation of the Society of Automotive Engineers, steps were taken to standardize steels to simplify the tasks of selection, purchase, and supply. The present S.A.E. steel standards are used throughout this country by all steel producing and buying units.

This numbering system uses digits which have a bearing on the analysis. The first two digits denote the type of steel. Plain carbon steels are designated as the 1000 series. Next in line are the popular nickel steels, referred to as the 2000 series, with the second digit designating the approximate nickel content. For example the 2100 grade contains 1½% nickel, 2300 contains 3½% nickel and 2500 refers to the 5% nickel steels. Equally popular are the nickel-chromium steels defined by the digit 3, and in which these two elements are present in an approximate ratio of 2 to 1, the second number indicating the nickel content, as for example the S.A.E. 3100 series with 1¼% nickel, 3200 with 1¾% nickel, and 3300 series with 3¼% nickel. Molybdenum steels are identified by the number 4, but the second digit of the series carries no significance, as S.A.E. 4600 refers to the 1¾% nickel .20% molybdenum steel, 4800 to 3½% nickel .20% molybdenum steel, 4100 to chromium-molybdenum, and 4300 to nickel-chromium-molybdenum steel. Straight chromium steels are designated as the 5100 and 5200 grades. S.A.E. 6100 refers to chromium-vanadium steels, 7100 and 7200 to tungsten steels, and 9200 to silicon-manganese steels.

The last two digits in all of these series refers to carbon content. Thus the .15% carbon carburizing grades, such as S.A.E. 2315, refers to a 3½% nickel steel containing .15% carbon. S.A.E. 4640 is a nickel-molybdenum steel containing .35 to .45% carbon.

Every buyer of steel has a list of the S.A.E. specifications with complete analysis ranges. This is usually supplied through steel mill or warehouse contacts. Thanks to the extensive stocks of steel producers and warehouse organizations, every one of the standard S.A.E. steels can be secured from at least one source. The more popular analyses, such as the S.A.E. 2300,

2500, 3100, and 4600 types are available in many shapes and sizes from nearly all alloy steel warehouses. For some of the more specialized steels, it may occasionally be necessary to approach the steel producers direct.

Some S.A.E. steels or controlled modifications of these steels are sold under trade names with which the users should become familiar. A few examples are Nikrome, Sampson No. 4, Hyten A15, etc. Each possesses treatments or quality refinements identified with the brand name. High carbon alloy steels not classified under the S.A.E. system are sold under such various trade names as Hyten M, Macalloy, Rita No. 7, Sampson No. 7, etc., and find fields of application where tough high carbon steels are needed.

Warehouses have done much towards carrying a wide variety of grades for the buyer of small lots of alloy steels. In addition to carrying a line of the well established nickel and nickel-chromium grades, several warehouses have recently added stocks of nickel-chromium-molybdenum oil hardening S.A.E. X-4340, S.A.E. 4640, and the 3½% nickel-molybdenum carburizing steel S.A.E. 4815.

Inherent grain size as determined by the McQuaid-EHN test, although not always specified by the steel buyer, is usually furnished in a fine grain size of 5 to 8. The fine-grained steels are tougher, less liable to crack or distort during heat treatment, and hence are generally more desirable for the majority of applications. The coarse-grained steels carburize more rapidly, have deeper hardening properties, and are easier to machine.

Applications of Nickel Alloy Steels

In the space of a short article it is not possible to discuss the various applications of nickel alloy steels in other than very general terms. The engineering alloy steels are classified broadly according to carbon content into two grades known as carburizing and direct hardening steels. The carburizing steels, containing a maximum of about .25% carbon, have the exceptional toughness and ductility characteristic of low carbon steels. When carburized and properly heat treated a file hard surface is produced which resists wear, and is backed up by a strong, tough core. The highest quality gears, subjected to very heavy tooth pressures, are made of carburized nickel steels. Other applications requiring a peak combination of wear resistance and toughness also utilize the carburizing types.

The direct hardening nickel steels, ranging in carbon content upwards of .25%, are stronger than the carburizing types of virtue of their higher carbon content, but lack the peak wear resistance of the surface hardened types. Very often these steels are heat treated in salt baths of a carburizing or cyanide type designed to produce a superficial hard surface which materially assists resistance to wear.

The direct hardening steels are usually quenched from above the critical range, after which treatment they are in the hardest, and also most brittle, condition.

Continued on page 120

Detailed monthly metal report from each plant shows, item by item, the present position and the future.

The Requisition Form uses an items classes and numbers system which is the same for all the plants and departments.

BY CARLETON REYNELL
General Purchasing Agent
Worthington Pump and Machinery Corporation
As told to E. L. CADY

KEEPING A

VARIED INVENTORY

SENSITIVE

THE inventory of the Worthington Pump and Machinery Corporation presents peculiar problems to the Purchasing Department. The solution of these problems is found in a set-up of committees which has the Purchasing Department help with the development of all new products and with the current troubles of both production and sales, then leaves the Purchasing Department free to function in the procurement field. Through this set-up the highly varied inventory of the company is kept adequate. More important from the profit standpoint, the inventory is kept sensitive.

To understand the problems of inventory, a glance at the operating set-up and methods of the company may be helpful.

The inventory must supply materials, parts and finished unit assemblies for a sales volume which will run well over \$20,000,000.00 this year. Individual sales range from municipal or industrial contracts running into hundreds of thousands of dollars per contract, to items of just a few dollars each. The individual contracts may demand that a tailor made product be designed from the ground up *after the*

order is received, and therefore although deliveries on standard orders are quick, the volume of unshipped orders on hand may run to \$10,000,000.00 at a time.

There are five plants all tied together in a centralized purchasing and inventory system. The main plant is at Harrison, N. J., with others at Newark, N. J., Buffalo, N. Y., Wellsville, N. Y., and Holyoke, Mass. With the exception of Newark and Wellsville, each plant houses several manufacturing divisions. Inventory per plant may run as high as \$2,500,000.00; the gross for all plants reaching \$8,000,000.00 to \$10,000,000.00.

Inventory problems to be considered by the Purchasing Department, are not confined to procuring the materials with which to get the product made. Right along with the materials inventories are considered those of finished products, sub-assemblies, and parts ready for assembly. By this means the company keeps adequate stocks on hand for quick deliveries, but it also keeps flows of production going for adequate burdening of departments and machines and for constant employment of labor—Worthington was a pioneer in making factories good places in which to work.

The image shows two overlapping forms from the Worthington Pump and Machinery Corporation. The top form is a 'METAL REPORT' (Form 115-D, 2-40-500) with columns for Material Specification, Order No., Price, Due on Order, On Hand, Total, Invt. per Month, and Approx. Req. Coverage. The bottom form is a 'PURCHASE REQUISITION' (Form 115-B, 1-15-100 M) with fields for Date, Req. No., Ref. No., Charge No., Appr. No., P. D. Class, Vendor No., and a large table for item details including Item No., Amount on Hand, Amount in Use, Minimum Stock, and Amount Requested. Both forms include a 'LAST ORDER' section at the bottom.

The whole physical inventory is not lumped, of course. It is broken down by types, such as (1) finished products ready to be sold, (2) finished parts made by the company, and finished parts bought outside, and (3) materials and supplies, with further classifications by consigned stocks in warehouses, materials owned by the company but being processed in outside plants, and the like. And types of inventory are divided by the company divisions to which they have been assigned, such as the Centrifugal Pump, or the Steam Pump, or the Railway, or the Refrigeration division in the Harrison plant.

Control by Committee

Types and department assignments of inventory make for easy estimating of needs. The combining of many accurate estimates of needs for individual materials, leads naturally to centralized control of inventory which with centralized purchasing can take advantage of markets and make all departments mutually helpful. The centralizing of inventory control, like that of purchasing, is a method and not a fetish. It goes only to the point where it is useful; beyond that point all plants buy and operate individually. This balance between centralization and decentralization, permits individual operations to be sensitive and so helps inventory control to be sensitive.

Under such methods and conditions, the use of a committee for the control and guidance of inventory is almost automatic. For if the production departments are to plan their operations for smooth flow then the sales executives must tell what is likely to be sold, and if both sales and production are to work at their best they both must inform and listen to the Purchasing Department.

The inventory committee, then, is not a "highfalutin" philosophy of scientific management, but is a practical means for executives to get together on mutual problems. It is, in fact, not a single committee, but a series of them in various plants and departments.

At the head of all inventory committees is H. D. Ramsay, Vice-President in Charge of Operations. Carleton Reynell, General Purchasing Agent, is a member of the main committee at the home of Harrison plant, and is ex-officio member of all others, sitting on one whenever he happens to be at any plant at committee meeting time. The Works Manager is always chairman of the committee; and the storekeeper who is part of the Works Manager's department, is always secretary.

Sub-committees are under the main committee and report to it. On the main committee at Harrison, are the Purchasing Agent, the Works Manager, the General Sales Manager, the Comptroller, the Storekeeper, and Divisional Sales Managers.

Committees Get the Facts

At a typical committee meeting, matters to be discussed may be presented in the form of letters which are really informal reports. The committee then discusses the items on the reports and arrives at decisions regarding them. The storekeeper, as committee secretary of a sub-committee, then sends written reports to the main committee, or as secretary of the main one makes written reports full copies of which go to the General Purchasing Agent.

The storekeeper is secretary and keeps the minutes largely because the first actions to be taken on decisions are in his hands and he has first need of the records. For the storekeeper sends the necessary orders to the factory to produce, and the requisitions

to the Purchasing Department to procure, as needed by the committee decisions. The requisitions to the Purchasing Department are divided so they can be routed directly to the buyers who specialize on the materials needed, and thus duplication of clerical work is avoided.

This committee should not be thought of as holding what the college boys call "bull sessions" in a smoke-filled room. Its actions are practical and flexible. Recently, in a discussion of steel bar stock inventory, the whole committee went into the store room and spent two hours where each member could clarify his visualizing by the physical presence of the stock items.

In another meeting, a divisional sales manager brought forward the fact that the demand for oil field equipment was rising rapidly. The committee did not confine itself to the immediate problems of current and near future demand, but discussed the field and its future as a whole. Thus was laid a foundation, not only for future inventory discussions, but also for work by the products development division which would need still further changes of inventory. The committee helps to keep inventory sensitive by taking long looks ahead.

The P. A. Determines Buying Policy

Discussions of such matters of mutual guidance, mean that all management helps the Purchasing Department to procure what is needed but only what is needed, and to plan by knowing what will be needed in the future. The Purchasing Department knows what all other departments are doing and intend or hope to do, but is in no way constricted in its handling of its own duties.

If, for example, the Purchasing Department decided the time was ripe for large purchases of pig iron, it might consult the company Treasurer about the cash outlay involved, but would not need to take the matter before the committee.

Between formal committee meetings, the Purchasing Department sometimes calls informal telephone meetings of the main committee, or of the chairmen of committees. This might happen if the copper market were on the move. The Purchasing Department gets from the Chief Draughtsman month by month reports of all orders involving the use of copper or copper alloys, and thus knows what is likely to be needed. With the market moving, the General Purchasing Agent might telephone all appropriate works managers and sales executives for their latest estimates of needs, then make his own decision and act upon it. Inventory then would be sensitive both to the company needs and to the market, because the Purchasing Agent was acting with knowledge of both.

The Purchasing Agent in such a situation might either buy or wait. He is free to provide inventory insurance by buying against rising markets or against possible delays of deliveries. In one recent such instance, the buying of about five hundred tons of scrap saved enough money against a rising market to pay the annual fire insurance bill of the plant in which it was used. In another instance there was a gain of \$5,000.00 on buying copper and a loss of \$2500.00 on buying scrap, leaving a net profit of \$2500.00 with the real profitability in the insurance against delayed deliveries. In such opportunities the Purchasing Agent is free and responsible to act. The committee does not tie him, it guides him.

Other departments do their full share of leaning on the Purchasing Department for informal guidance.

Continued on page 111

OF first importance in any discussion of the oxy-acetylene process is an understanding of the basic principles of welding and cutting. Most plants are familiar with the use of welding for simple repair work in which two pieces of metal are brought together and the edges in contact are quickly melted with the oxy-acetylene flame. Under its intense heat, approximately 6,000 deg. F., the molten metal flows together until each edge is completely fused with the other and also with metal from the welding rod, if additional metal is needed to close the gap. For all practical purposes the metal becomes in one rapid, economical operation a single, solid piece of metal.

In regard to oxy-acetylene cutting, it may seem strange at first thought that one process should embrace two such divergent operations as welding and cutting, one being the exact opposite of the other. The familiar high school experiment of a piece of steel wire burning

What the Purchasing

Agent Should Know About

Oxy-acetylene WELDING and CUTTING

Equipment and Processes

By L. D. BURNETT

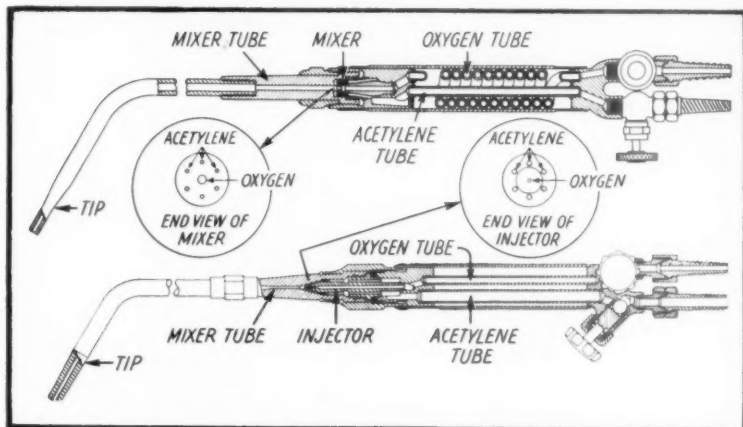
The Linde Air Products Company

brilliantly in a test tube of oxygen illustrates the scientific principle that forms the basis of oxy-acetylene cutting. Above a red heat, iron combines with pure oxygen so rapidly that it actually burns, or oxidizes. Thus if a spot on a piece of iron or steel is heated red hot by the preheat flames of the blowpipe nozzle and a jet of oxygen from another orifice in the same nozzle is directed upon the spot, the iron will begin to oxidize vigorously. The melting iron runs off as a molten slag,



After this weld is completed it can be ground flush with the surface so as to be practically invisible.

Cross sections of two typical welding blowpipes: a medium-pressure blowpipe (upper) and injector-type blowpipe (lower) with enlarged end views of mixer and injector to show the relative sizes of oxygen and acetylene openings.





The jet of cutting oxygen released by the lever quickly pierces the preheated steel.

exposing more iron to the action of the oxygen jet. This cutting action is but a matter of seconds. The jet can then be moved along, producing a clean, narrow, accurately controlled cut.

Apparatus—Its Construction and Operation

Oxy-acetylene equipment consists essentially of a welding or cutting blowpipe, sources of oxygen and acetylene, and regulators to control the flow of oxygen and acetylene from their source to the blowpipe. If welding is being done there is also usually required a welding rod for the addition of metal and welding flux to assist in this operation.

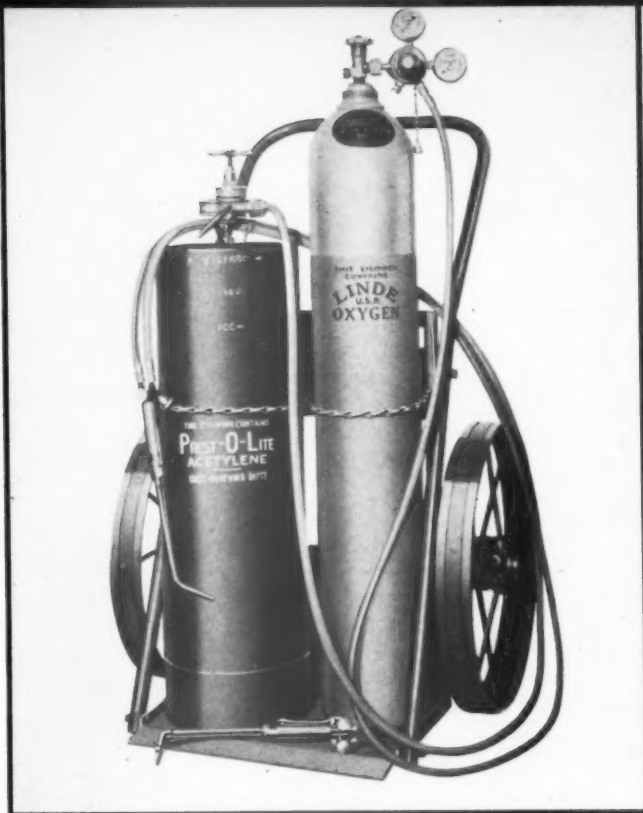
The Welding Blowpipe

A blowpipe—especially a welding blowpipe—might be compared to any automatic machine that takes in two or more raw materials and turns out a finished product. The blowpipe takes in pure oxygen and pure acetylene and turns out an oxy-acetylene mixture which has the correct proportion of oxygen to acetylene, and the correct volume at the correct velocity to produce the desired flame.

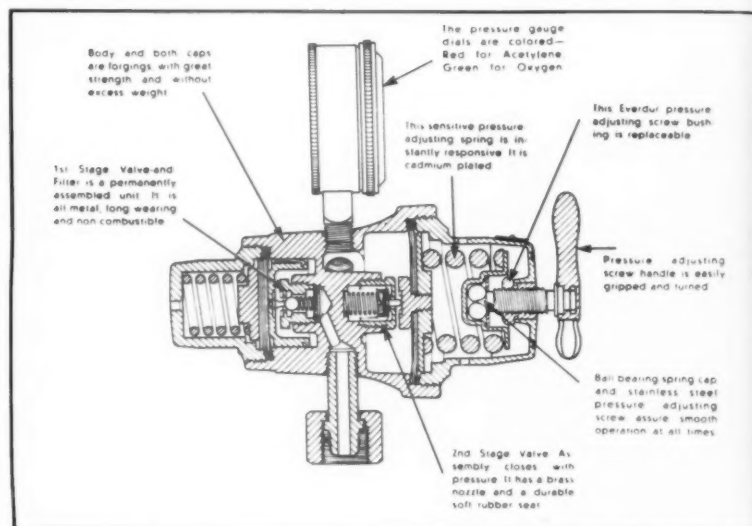
The three important characteristics of the oxygen-acetylene mixture as it issues from the blowpipe tip are its volume, its velocity, and its proportion. The volume—or rate of flow—determines the size of the flame, or its heating capacity. The velocity largely determines the type of flame—whether it is “harsh” or “soft” or something in between. The proportion of the two gases determines whether the flame will be neutral, oxidizing, or carburizing (with an excess of acetylene). The action of a blowpipe becomes much clearer when the relation of these characteristics to the various parts of the blowpipe is understood.

The principal parts of any welding blowpipe, so far as the actual flow of gas is concerned, are the valves, the mixer (or injector) and the tip. The valves, in addition to their importance for shutting off the flow of gas entirely and for lighting the blowpipe, are intended primarily for controlling the proportions of oxygen and acetylene in the mixed gases. The mixer (or injector) and the tip work together to control the other characteristics. Volume of gas flow and velocity are finally determined by the sizes of the orifices, or holes, in the mixer (or injector) and in the welding tip, by the gas pressures back of the mixer, and by the relation between the sizes of the mixer and tip orifices.

That's the story in a nutshell, but it leaves a lot of unanswered questions. So we will trace the gas through the blowpipe and see just what happens to it on its journey.



This typical welding and cutting unit is completely portable and may be easily moved about the shop.



The principles of two-stage regulation of oxygen are shown by this cross section of an oxygen regulator.

First the gases pass through their respective valves, where the proportions of the two gases are controlled. However, if the regulators are properly adjusted, both valves are usually nearly wide open and there is little restriction to the flow of gas.

The Mixer

From the valves, the gases continue to run through separate tubes or passages to the mixer or injector. Again, there is little effect on the volume or pressure of the gases. Then things begin to happen.

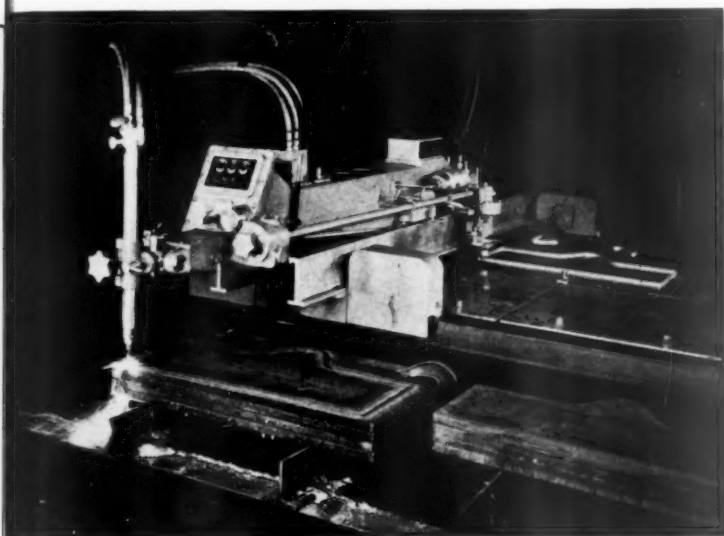
Of the mixer and injector, the mixer is simpler, so we will look at that first. While mixers in various medium-pressure blowpipes differ radically in appearance, all are basically alike up to a certain point.

The end view of a typical mixer is shown in the

sketch herewith. The center opening is for one gas (it may be either oxygen or acetylene, depending on the make of blowpipe) and surrounding it are smaller openings for the other gas. The cross section of the central opening is approximately equal to the combined cross sections of the smaller openings, and the oxygen and acetylene pressures are usually approximately equal. While the gases are flowing through the mixer passages, their velocity is momentarily increased. When they leave the mixer they expand to fill the larger space available and become intimately mixed. The arrangement of the mixer opening promotes a much faster and more satisfactory mixing action than would take place if there were only two openings, one for oxygen and one for acetylene.

The Blowpipe Tip

From the mixer the gas mixture flows to the tip through a passage which finally narrows down to a perfectly straight, uniform section which is the true "tip." The size of this passage and its length are closely related to the size of the mixer passages. In the type of blowpipe under consideration, each welding head has an individual mixer, and both the mixer and tip orifices are sized for the production of a satisfactory welding flame with a definite, predetermined range of gas volumes. This gives each head a broader range of *efficient operation* than it would have if the same mixer



Stack-cutting makes possible the large scale production of identical parts from piled steel plates.

were used for all the welding heads. Slight fluctuations in pressure have less effect on the flame, better mixing is secured, and the valve adjustment required to secure the exact size and type of flame desired is less delicate.

How Injectors Differ from Mixers

Blowpipes with mixers of the type just described must be supplied with medium-pressure acetylene at variable pressures from 1 to 15 lb. per sq. in. Injector-type blowpipes will operate on medium-pressure acetylene supplied through a regulator; on medium-pressure acetylene supplied through a hydraulic back-pressure valve at a constant pressure of 3 to 8 lb. per sq. in.; or on low-pressure acetylene at a constant pressure of less than 1 lb. per sq. in. Regardless of the

MODERN APPLICATIONS OF THE OXY-ACETYLENE FLAME

Maintenance and Repair

Welding—to join cast iron, semi-steel, wrought iron, plain carbon steel, cast steel, alloy steel, stainless steel, clad steels, copper, aluminum, nickel, Monel metal, lead.

Bronze-Welding—to join semi-steel malleable iron, wrought iron, galvanized iron, carbon steels, cast steels, copper, nickel, Monel metal.

Bronze-surfacing.

Hard-facing.

Cutting to size.

Scrapping.

Production Welding

Automatic machine welding with multi-flame heads having up to 40 flames.

Hand welding at production line speeds for repetitive work and in hard-to-reach places.

Structural welding.

Heating

Straightening, bending and forming operations.

Cutting

Straight lines, bevels, shapes and circles.

Duplicate cutting, up to five blowpipes.

Stack cutting, for quantity lots of thin steel sheets.

Steel Conditioning Processes

Deseaming and desurfacing.

Gouging.

Descaling.

Flame-Treating Processes

Flame-hardening—on quench-hardenable steels—particularly adaptable to large articles where other methods are impracticable, also on such parts as gears, shafts, rolls, rail ends, and automotive valve stems requiring hard surface and ductile, shock resistant core.

Flame-softening—on cut edges of low-alloy high-strength structural steels, for economical fabrication of structural shapes, for facilitating machining operations.

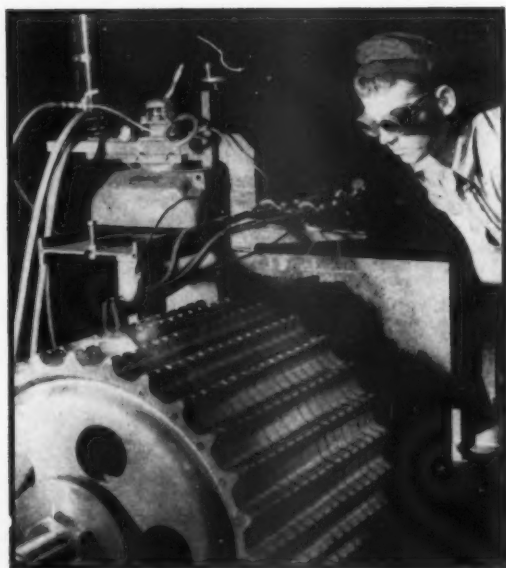
Flame-Strengthening—for imparting local strength to highly-stressed parts and sections.



In descaling a steel billet, the nozzle quickly cuts a shallow path to remove surface defects.



The operator is flame-descaling a 9-ton steel casting.



Tractor sprocket teeth are one of the many objects that can be profitably flame-hardened for longer life by the oxy-acetylene process.



Flame-softening brings wider adaptability to the low-alloy structural steels.

type of acetylene supply, however, the acetylene pressure inside the blowpipe is reduced to less than 1 lb. per sq. in. by adjustment of the acetylene valve of the blowpipe.

The injector must therefore be something more than a metering and mixing device. What happens in the injector is this: the oxygen flows at high speed through a small orifice to create a partial vacuum which draws acetylene into the mixture. In end view, an injector resembles a mixer with one important difference; the central opening is always used for oxygen and the cross section of this opening is always much less than the total cross section of the acetylene passages. The size of the oxygen orifice in the injector must be determined with extreme care, and any clogging or marring of this orifice will affect the injector action.

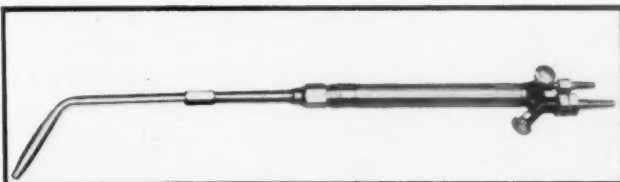
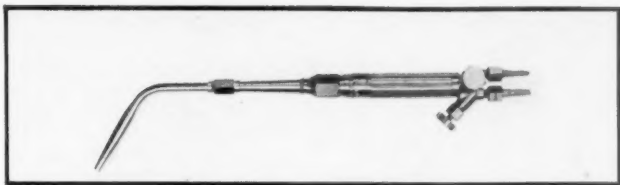
An injector-type blowpipe has one extremely important advantage over any medium-pressure blowpipe. Slight fluctuations in oxygen pressure will not upset the carefully balanced portions of oxygen and acetylene in the flame, because the amount of suction created by the injector—and therefore the amount of acetylene drawn into the oxy-acetylene mixture—will vary as the pressure varies, up or down, and the proportion of the two gases thus remains the same.

Practically all welding blowpipes are provided with a series of interchangeable heads for a wide variety of operations. In addition, a cutting attachment in some cases can be put on in place of the welding head for light or occasional cutting jobs.

The Cutting Blowpipe

Almost everything that has been said about welding blowpipes applies equally well to cutting blowpipes as far as the preheating flames are concerned. The design of a cutting blowpipe, however, must solve several new problems in harmonizing the simultaneous control of a small preheat oxygen volume and a large cutting oxygen volume, derived from the same source of supply; and in the sizing and spacing of the orifices in the cutting nozzles.

In the cutting blowpipe, the oxy-acetylene flame is produced at a series of openings in the blowpipe tip or nozzle which surround a larger central opening. The central opening supplies the jet of oxygen that actually does the cutting, and this supply of oxygen has a separate controlling valve operated by a conveniently located cutting-valve lever on the blowpipe handle. The function of the oxy-acetylene flames is primarily to preheat the metal that is to be cut, and secondarily to assist in sustaining the reaction. The use of a number of preheating flames, rather than a single one, makes it possible to change the direction of cut as desired.



Welding blowpipes are available for every range of operation. Comparative sizes of some standard models are indicated above.

Simply by changing the size of the cutting nozzle or cutting tip, a single cutting blowpipe can be used to cut a wide range of metal thickness. In addition to general-duty cutting blowpipes, there are also available other types for more specialized service. These include heavy-duty blowpipes, and machine-cutting blowpipes featuring extreme precision for use on oxy-acetylene cutting machines.

Oxygen

For dependable operation, the purity of the oxygen used is of high importance. When you see the letters U.S.P. on cylinders of oxygen you know that the product conforms to the standards established by the United States Pharmacopoeia for certain products used for medical purposes. By this indication of the oxygen's suitability for human consumption in the treatment of disease, its high purity and excellence for industrial use is likewise assured.

Oxygen is distributed in steel cylinders, which have been drawn from a single plate of high-grade steel, and carefully heat-treated so as to develop great strength and toughness. Before use they are tested with water pressure at 3,360 lb. per sq. in. to assure ample strength in shipment and service.

Since oxygen cylinders are shipping containers for compressed gas, they are subject to the stringent rules and requirements of the Interstate Commerce Commission and other regulatory bodies. This is one reason why the cylinders are not sold. By retaining ownership of the cylinders, the oxygen company assumes all responsibility for complying with the various regulations and thus relieves the customer of much unnecessary bother and expense. In order to make oxygen readily available in all localities as well as to keep down transportation charges, oxygen manufacturers have established plants in many industrial centers and these are supplemented by distributing stations. Motor trucks are used in supplying customers near plants and distributing stations; those farther away are promptly served by freight or express.

Heavy work requiring more than one cylinder of oxygen can be continued without interruption by using



The portable cutting machine brings speed and economy to metal fabricators.

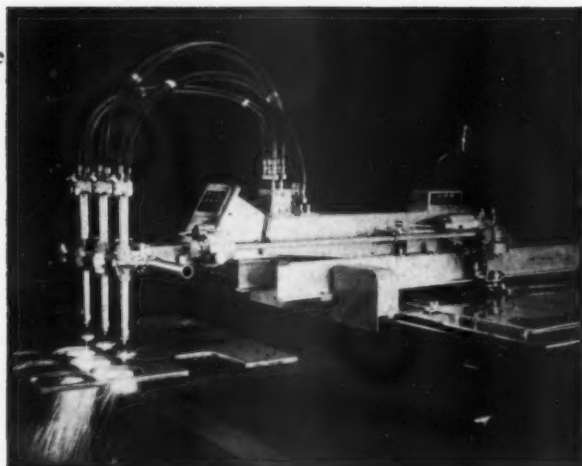


The monitor-type cutting machine combines portability with many of the operating advantages of the larger stationary machines.

a manifold to connect a number of them together. For such single operations a portable five-cylinder manifold is most convenient. For a continuous supply of oxygen to a shop or plant, manifolds for six, ten, twenty, thirty or more cylinders may be used, and the oxygen delivered to individual stations through pipe lines. Specifications for the installation of such oxygen pipe lines can be obtained from the oxygen manufacturer.

Acetylene

Acetylene also is distributed in cylinders, but since free acetylene should not be stored at above 15 lb. per sq. in. pressure, it is handled differently. The steel cylinders are first packed with a porous material, the fine pores of which are then filled with acetone, a liquid chemical having the property of dissolving or absorbing many times its own volume of acetylene. In such



Automatic multiple cutting of circles is only one of the many operations that are possible with the large stationary cutting machine.



Two-stage oxygen and acetylene regulators assure a dependable, unfluctuating blowpipe flame over the entire range of welding and cutting operations.

cylinders, a great quantity of acetylene can be transported safely and efficiently.

The acetylene is made by the manufacturer in large generators, purified very carefully, and then dissolved into the cylinders. Numerous producing plants and distributing stations make it possible to obtain dissolved acetylene anywhere without difficulty.

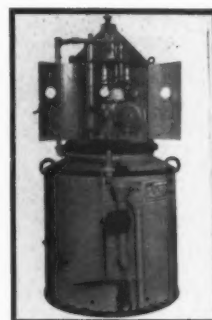
Acetylene Generators and Carbide

Large users of acetylene often find it convenient and economical to generate their own acetylene. For this purpose calcium carbide of a high quality should be used. Only rigid manufacturing regulations assure accurate sizing and uniform, high gas yield.

Generators of various size and types are sold to fit the individual need of the plant—all the way from the small portable models to the large-size generators that are housed in their own generator room and connect with a distributing piping system. The generators usually operate on the carbide-to-water principle, small lumps of carbide being fed from a hopper into a comparatively large volume of water to form acetylene gas. The heat given off during the reaction is readily absorbed by the surrounding water and the acetylene formed by the reaction bubbles up through the water, being cooled and purified on the way. Good acetylene generators for use in welding and cutting are designed to be automatic in operation and possess positive interference mechanisms to make improper operation difficult or impossible. Equally important for dependable operation are two relief valves, one for the generating chamber and one for the hydraulic back-pressure valve.

Regulators

The pressure at which oxygen and acetylene enter the blowpipe are much below the pressures in the cylinders. Accordingly some method must be provided for reducing the relatively high cylinder pressures to the lower working pressures in the blowpipe. Furthermore, in order that the blowpipe flame may be steady and uniform, the pressure of the gases in the blowpipe must not fluctuate, although their incoming pressure is constantly changing as the cylinder contents become less. This is the purpose of the regulator, which can be set to reduce the pressure to any desired point within the capacity of its type regulator and keep this pressure constant without further attention.



(a) The small acetylene generator is readily portable. (b) A medium size generator, available either for portable use for stationary installation, fits the needs of many users of one or two blowpipes. (c) The stationary generator is designed for the large user. They are frequently installed in pairs for alternate operation to provide a continuous supply of acetylene to a distribution system.

In the recently developed two-stage oxygen regulators, the pressure reduction is accomplished in two separate steps. The full cylinder pressure of 2,000 lb. per sq. in. enters the regulator and is reduced to about 250 lb. by the first stage, which is entirely automatic and non-adjustable. The second stage is similar in design to the first but has a larger-diameter diaphragm and lighter springs. It is adjustable by the operator to any desired working pressure up to the capacity of the regulator by turning an adjusting screw. Instead of having to carry the full cylinder pressure load of 2,000 lb. per sq. in., the second stage is required to function within only a comparatively narrow range.

Welding Rods

Great metallurgical care and skill goes into the manufacture of the welding rods which are used to fill in the joint during the welding operation when additional metal is needed. Metal from such rods forms a large proportion of the actual weld metal and consequently the rod plays a most important part in determining the quality of the finished weld.

Good welding rods must be of correct chemical composition, and, equally important, free from foreign matter. The metal from the rod changes somewhat in its chemical composition and properties after passing through the welding flame. Consequently, a good rod must have its composition so fixed as to provide for these changes, in order that the metal in the weld will be of as good quality or better than the parts being joined. It must melt and flow freely and unite readily with the base metal to produce sound, clean welds. The difference in price between the best rods obtainable and inferior rods is too small a portion of the total

Continued on page 114



*"Stop talking for a minute
and let me think!"*

Silhouette STUDIES



J. C. ANDREWS has been buying for the American Hardware Corporation, New Britain, Conn., since 1921. It has long been common knowledge that the organization has a high regard for his ability as an executive and for his excellent service in purchasing. An

additional bit of concrete evidence on that point came just a few weeks ago, in the form of an announcement that, effective June 15th, Joe Andrews would sign his correspondence over the title of Vice-President and Director of Purchasing. That was gratifying news both for his many personal friends and for those who are interested in the proper recognition of purchasing as an integral function of management in industry.

Andrews is a home town boy, a native of New Britain and a graduate of its public schools. He went on to Cornell University, and graduated as a chemical engineer, in the class of 1909. It was two and a half years later, in January, 1912, that he first became associated with American Hardware, establishing the research laboratory for the company and directing this important new phase of the company's activity.

The World War interrupted his industrial career, as in the case of thousands of this business generation. Andrews won a Captain's commission in the Ordnance Department, U. S. Army. At the conclusion of hostilities, he picked up the threads again, landing with the Scovill Manufacturing Company in nearby Waterbury, where he acquired two years of valuable production experience as assistant general foreman in the finishing department. But his former employers had not forgotten nor lost sight of him. In 1921 he was called back to the American Hardware Corporation as Assistant Purchasing Agent. In 1931 he came to the head of the department as Purchasing Agent, and was also named Assistant Secretary of the corporation. The recent promotion is a logical sequel. In his present capacity, he directs procurement for a large and progressive New England organization which includes among its subsidiaries such well known and highly respected names in Connecticut's famed metal-working industry as P. & F. Corbin, the Corbin Cabinet Lock Company, Corbin Screw Corporation, and the Russell & Erwin Manufacturing Company.

It is natural that Mr. Andrews has consistently taken a keen personal interest and active part in the municipal government and community life of his home city. He has likewise devoted himself to the work of the Purchasing Agents Association, in both the local and national program, and is currently serving as a member of the Executive Committee of the Connecticut Association.

His chief diversion is riding. He has his own saddle horse, and follows this avocation enthusiastically as a



J.
C.
ANDREWS

means of health, exercise and recreation. The pleasures of Western "dude ranches" have been dangled before him in vain. He has his own convictions on that point, and loses no opportunity to spread New England's fame with the claim that the finest riding on the American Continent is to be found at Acadia National Park, on Mount Desert Island, Maine.



CHARLES D. TAYLOR, Assistant Purchasing Agent of the Barnsdall Oil Company, is national director of the Tulsa Association, following a successful term as president last year. He came to Oklahoma from his native Missouri twenty-three years ago, as a

youngster in his teens, working with a crew of telephone exchange installers at Ardmore for the Western Electric Company.

His first observation of the oil industry inspired him with the desire to become a part of it, and he promptly made a start by getting a job for an oil well supply concern. The next five years he spent in the supply business, at Tulsa and in field stores throughout Oklahoma and Kansas. His contacts with purchasing men during this experience helped to form a new ambition—eventually to join the purchasing department of some oil company.

That ambition was realized in 1923, when he entered the purchasing department of the Phillips Petroleum Company at Bartlesville. With the exception of four months spent in gaining field experience from an operating standpoint during the opening of the Powell Field near Corsicana, Texas, he has been purchasing ever since. Early in 1924, he joined the purchasing department of the Waite Phillips Company, and three

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months later was appointed Assistant Purchasing Agent. When that organization was subsequently taken over by the Barnsdall Oil Company, Taylor was retained in the same capacity.

He has been one of the "wheelhorses" of the Tulsa Association ever since joining in 1924. Likewise in Community Fund and Chamber of Commerce work, he has been an able and conscientious worker in the ranks. He plays golf for relaxation and exercise, entertaining no illusions about emerging from the "dub" class. His bridge game is also strictly for recreation. He enjoys football and baseball, as a spectator. Confesses to no hobbies, but two husky sons, twelve and two, seem to fit that specification.



ROBERT L. GRUBE, Purchasing Agent for the Stephens-Adamson Manufacturing Company at Los Angeles, is not a native son of California, but his enthusiasm for the state of his adoption and his long and active association with purchasing af-

fairs on the Pacific Coast have intimately linked him with that section in the minds of most purchasing men. He was born in Chicago shortly before the turn of the century, spending his boyhood there and in the nearby city of Aurora, Ill. One of his early jobs, after graduating from high school, was in the accounting department of the Stephens-Adamson office in Aurora.

He first came to Los Angeles in 1917. His plan at that time was to study pharmacy at the University of Southern California, and he started in on what was destined to be a rather checkered college career. Eventually he received his degree from that University, but this first enrollment was interrupted by the World War, and a two-year hitch with Field Hospital No. 25 of the A.E.F. convinced him that he wanted no part of medical work.

Upon receiving his discharge from the Army, he went back home and entered the University of Illinois,

a most fortunate decision for there he met the girl who subsequently became Mrs. Grube. Then once more his college course was interrupted, this time to go to work as a traveling auditor for the Loyal Order of Moose, a job at which he spent the next two years.

The young couple moved to California shortly after their marriage. Bob stopped in at the Los Angeles plant of the Stephens-Adamson Company, and they put him to work at accounting. A year later, in 1924, he was assigned to purchasing, and has been buying there ever since. Once again he picked up the threads of his academic course, enrolling in the Extension Division of U.S.C. to equip himself for the new work, and this time drove through to finish—the hard way — with six years of concentrated evening courses which, with his Illinois credits, earned a diploma from the Trojans.

He joined the Los Angeles Association of Purchasing Agents in 1925, attended his first national convention in Los Angeles the following year, and has been a zealous and willing worker in both the serious and social phases of the association program these many years, and has enjoyed it all the way. He became president of the Los Angeles group in 1939. The N.A.P.A. Thirty-Niners have a vivid impression of him as a genial, thoughtful and obliging host during the two delightful days spent in that city en route to the San Francisco meeting.

Naturally sociable and cooperative, his activity in organization work has not been confined to the purchasing association. His service with the Loyal Order of Moose has already been noted. Another of his keen interests is Toastmasters International, and he has served a term as International Secretary of that body. Formerly a Kiwanian, he is at present an active member of the Vernon Rotary Club.

The Grubes have a son and a daughter, Robert and Margaret. Bob insists that his idea of sport is to watch some one else perform, but he is a capable performer himself at softball and doesn't require a great deal of persuasion to get into a game.

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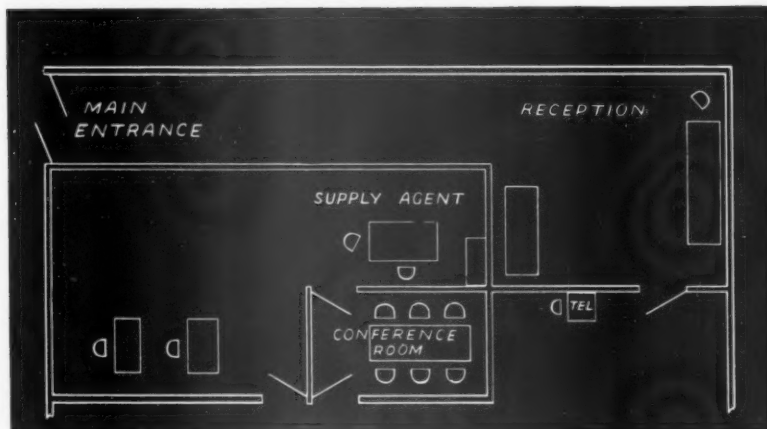
A. A. KROME

Supply Agent, Carter Carburetor Div., A.C.F.

Says

WE TALK IT OVER

in a CONFERENCE ROOM



It's just a step from the buyer's desk to the conference room. Here's Supply Agent Krome ready for an interview.



At the conference table the decks are cleared for action, with no distracting influences.

The buyer's desk is not disarranged; his working papers remain truly confidential.

HOWEVER large it may be, the buyer's desk is oftentimes too small to enable the buyer to do the best possible job of really getting a complete picture of what sales representatives have to offer. Therefore we initiated the practice of using a conference room for interviewing salesmen so that there would be room around a large table for as many as six people, and we could also use the time for undivided attention to the subject under discussion. The large table in our conference room provides a place where the sales representatives can spread out their samples, catalogues, sales literature, blueprints and photographs without disturbing the papers on my working desk. Thus we have every opportunity to go over every detail of each proposal which is under discussion, and promptly when the interview is terminated, I can return to my own work without having to rearrange the papers on my desk. This eliminates the lost time which frequently occurs when interviews are conducted strictly at the purchaser's working desk, and in addition, dignifies the interview and enables both sides to give their concentrated attention to the details at hand.



THE MARKET PLACE



First - of - the - month quotations
for carloads or mill shipments,
with comparative prices quoted
one month ago and one year ago

ACIDS

	Sept. 1 1939	Aug. 1 1940	Aug. 31 1940
Acetic, 28%, cwt.	2.13	2.23	2.23
Muriatic, 18 deg., cwt.	1.50	1.50	1.50
Nitric, 36 deg., cwt.	5.00	5.00	5.00
Oxalic, Works, cwt.	10.75	10.75	10.75
Phenol, Works, cwt.	14.25	14.25	14.25
Sulphuric, 66 deg., ton	16.50	16.50	16.50



BUILDING MATERIALS

Brick, N. Y. dock, per M.	12.50	12.50	12.50
Cement, f.o.b. plant, bbl.	2.15	2.15	2.15
Glass, single B, per box.	2.70	2.70	2.70
Lime, per bbl.	2.16	2.85	2.85
Nails, wire, per keg	2.45	2.55	2.55
Oak flooring, per M. ft.	69.00	72.00	68.00 ↓
Southern pine, K.C., per M. ft.	22.39	22.80	24.57 ↑

CHEMICALS

Alcohol, denatured, gal. ....	.27½	.31½	.31 ↓
Alum, potash, cwt.	3.40	3.75	3.75
Alumina Sulf., Comm., Works, cwt.	1.15	1.15	1.15
Ammonia, aqua, 26 deg., drums ....	.02	.02¼	.02¼
Arsenic			
White, cwt.	3.00	3.00	3.00
Red, cwt.	15.75	18.00	18.00
Barium			
Chloride, ton	77.00	77.00	77.00
Carbonate, ton	56.50	56.50	56.50
Benzol, pure, gal. ....	.16	.16	.14 ↓
Borax, powd., ton	48.00	48.00	48.00
Chlorine, cwt.	1.75	1.75	1.75
Formaldehyde, lb. ....	.05¼	.05¼	.05¼
Glycerine, drums, lb. ....	.12½	.12½	.12½
Lead acetate, white, broken, cwt.	10.00	11.00	11.00
Nickel sulphate			
Double ....	.13	.13	.13
Single ....	.13	.13	.13
Potash			
Caustic, solid ....	.06¼	.06¼	.06¼
Permanganate ....	.18½	.18½	.18½
Sal Ammoniac			
Gran, white, cwt.	4.50	4.50	4.50
Gran. gray, cwt.	5.75	5.75	5.75

Salt peter crystals ....	.07½	.081	.081
Soda			
Ash, 58%, light, bulk, cwt. ....	.90	.90	.90
Caustic, 76%, solid	2.30	2.30	2.30
Sal, Works, cwt.	1.10	1.10	1.10
Sodium			
Bicarbonate, cwt.	1.70	1.70	1.70
Phosphate, cwt.	1.85	2.10	2.10
Silicate, 60 deg., cwt.	1.65	1.65	1.65
Sulphur, Comm., cwt.	2.60	2.60	1.60 ↓



COAL & COKE

Anthracite, stove, mines.	5.65	6.05	6.15 ↑
Bituminous, Cleaf, mine run..	2.50	2.50	2.50
Bituminous, Pa. Grade A	2.40	2.30	2.30
Beehive Coke, Connellsville ...	3.75	4.35	4.35
By-product Coke, Newark	10.80	11.38	11.38

FERTILIZERS

Muriate potash, 80-85%, per unit K20 ....	.53½	.53½	.53½
Sulphate potash, 90-95%, bags.	36.25	36.25	36.25
Nitrate soda, bulk	27.00	27.00	27.00
Sulphate ammonia, dom. bulk..	27.00	28.00	28.00
Steamed bonemeal, 3 and 50, per ton	23.50	32.50	32.50

GRAINS

Barley, malting, bu. ....	.60	.67½	.57½ ↓
Corn, No. 3, yellow, bu. ....	.51	.65¼	.65 ↓
Oats, No. 2 white, bu. ....	.34¾	.30¾	.31 ↑
Rye, No. 2, Western, bu. ....	.64½	.61	.56½ ↓
Wheat, No. 2, hard winter, bu.	.73¾	.66½	.70¾ ↑
Flour, spring patents, 196 lbs..	5.20	4.45	4.55 ↑

HIDES

Light native cows, lb. ....	.12	.11¼	.09¾ ↓
Heavy native steers, lb. ....	.12	.10¼	.09¾ ↓
Calfskins, 5-7 lbs. per skin....	1.25	1.20	1.00 ↓

IRON & STEEL

	Sept. 1 1930	Aug. 1 1940	Aug. 31 1940
Pig iron, foundry No. 2	21.00	23.00	23.00
Pig iron, basic, valley	20.50	22.50	22.50
Cast iron pipe, New York....	53.00	52.20	52.20
Forging billets, Pittsburgh base	40.00	40.00	40.00
Sheet bars, Pittsburgh base....	34.00	34.00	34.00
Wire rods, Pittsburgh base....	43.00	40.00	40.00
Cold rolled sheets, cwt., Pitts- burgh base.....	3.20	3.05	3.05
Hot rolled annealed sheets, cwt., Pittsburgh base.....	2.00	2.10	2.10
Cold rolled strips, cwt., Pitts- burgh base.....	2.95	2.80	2.80
Hot rolled strips, cwt., Pitts- burgh base.....	2.00	2.10	2.10
Tin plate, cwt., Pittsburgh base	5.00	5.00	5.00
Bars, cwt., Pittsburgh base....	2.10	2.15	2.15
Shapes, cwt., Pittsburgh base...	2.10	2.10	2.10
Bright wire, cwt., Pittsburgh base	2.60	2.60	2.00 ↓
Ground shafting, cwt., Pitts- burgh base.....	2.70	2.65	2.65
Rails, ton, Pittsburgh base....	40.00	40.00	40.00
No. 1 heavy melting scrap, ton, Pittsburgh.....	10.00	18.50	18.50



METALS, NON-FERROUS

Aluminum, virgin ingots.....	.20	.18	.18
Antimony, American, spot....	.12	.14	.14
Copper			
Electrolytic .....	.11	.11½	.11 ↓
Casting .....	.10¾	.113	.10¾ ↓
Lake .....	.11½	.11½	.11 ↓
Chromium, 97%, spot.....	.85	.84	.84
Lead, E. St. Louis.....	.049	.0485	.0475 ↓
Nickel, ingot .....	.35	.35	.34 ↓
Quicksilver, flask.....	93.00	190.00	184.00 ↓
Silver, bars, N. Y., per oz....	.35½	.34¾	.34¾
Tin, Straits, spot .....	.52	.52¾	.50¾ ↓
Zinc, E. St. Louis.....	.05	.0625	.065 ↑

METAL PRODUCTS

Copper, wire, bare, cwt.....	14.875	14.875	14.375 ↓
Yellow brass sheets, high.....	16.85	18.56	18.23 ↓

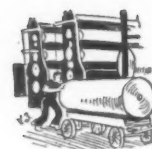


NAVAL STORES

Turpentine, gal. ....	.30	.33	.35½ ↑
Rosin, Grade B, cwt.....	1.88	1.80	1.80

PAINT MATERIALS

White lead, dry, basic, car- bonate .....	.07	.07	.07
Carbon black .....	.03¾	.03075	.03075
Shellac, orange .....	.10½	.14	.14
Linseed oil .....	.085	.092	.088 ↓



PAPER

News, roll, ton	50.00	50.00	50.00
Book, M. F., cwt	6.00	6.40	6.40
Wrapping, northern, cwt.....	4.75	5.25	5.25
Wrapping, southern, cwt.....	3.50	4.25	4.25
Wrapping, manila jute, cwt....	7.75	8.25	8.25
Chip board, No. 1, ton.....	30.00	37.50	35.00 ↓
Wood pulp, mech., ton.....	22.00	34.00	34.00
Wood pulp, sulph., No. 1, cwt.	2.00	3.17½	3.17½



PETROLEUM

Crude, Mid-Continent	1.02	1.02	1.02
Crude, Penna.	1.02	1.55	1.55
Gasoline, 65 oct.....	.05¾	.05¾	.05 ↓
Bunker Oil C.....	1.05	1.35	1.15 ↓
Kerosene, 41-43 grav.....	.04½	.051	.048 ↓
Penn. bright stock, light, 25 P.T.24	.22	.19 ↓
Penn. cylinder oil, 600 flash....	.18	.18½	.17½ ↓



RUBBER

Smoked sheets19½	.22	.19¾ ↓
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TEXTILES

Cotton middlings, Galveston...	.0828	.0956	.0909 ↓
Cotton yarns, 22s.....	.22½	.23½	.23½
Print cloths, 38½", 64x60.....	.04¾	.04¾	.04¾
Sheeting, 37", 48x48.....	.05½	.05½	.05½
Wool, fine combing, ½-blood..	.67	.84	.84
Worsted yarns, French 2-40s...	1.47½	1.77½	1.75 ↓
Worsted yarns, English 2-40s...	1.35	1.60	1.57½ ↓
Silk, Japan, double extra cracks	2.65	2.53	2.47 ↓
Rayon, viscose, 150, 40s.....	.51	.53	.53
Burlap, 10½-oz., 40".....	.059	.0725	.069 ↓
Hemp, Manila .....	.05¼	.05¾	.05¾

PURCHASING



4500 TONS OF STEEL PUTS THE SPRING IN AMERICA'S STEP

Ever wonder why even your oldest shoes don't get fallen arches, but instead always maintain their springiness? It's because of a little metal shank piece put in the shoe arch as a reinforcement. Here is another example of the importance of steel in your daily life. Each year 4500 tons of steel go to make these little metal shanks for 250,000,000 pairs of shoes.

The comfort, safety, convenience of almost every moment of our day depends on steel. We enjoy food delicacies from all over the world that could never reach us except for steel cans made of tin plate. Our food is cooked on a steel range, in sanitary enameled steel utensils. We work at steel machines, steel typewriters, or steel desks in buildings made safer by steel framework. We travel by automobile, train, ship or plane made of steel. Our clothing, newspapers, movies are made by steel equipment. And at the end of the day we bathe in a steel tub, and sleep in a bed made comfortable by steel springs.

Youngstown makes the steel for countless of these uses. Every man in our mills knows he is working for your convenience and safety, and is proud of it. Men are the most important factors in steel. It is because of our men that buyers know they can depend on Youngstown's steel.

*Sheets - Plates - Pipe and Tubular Products
Conduit - Tin Plate - Bars - Rods - Wire
Nails - Tie Plates and Spikes*

25-21C



THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels
General Offices - YOUNGSTOWN, OHIO

PERSONALITIES

in the NEWS

Herbert L. Kimball, formerly Purchasing Agent and more recently in charge of production for the Tea Garden Products Co., San Francisco, has been appointed secretary of that company. Mr. Kimball was a charter member of the Northern California Association, and was elected to honorary membership five

years ago, when he was transferred from the purchasing field.

Leslie Moore has been appointed Assistant Purchasing Agent for the City of San Antonio, Texas, succeeding James Knight, who resigned to enter private business.

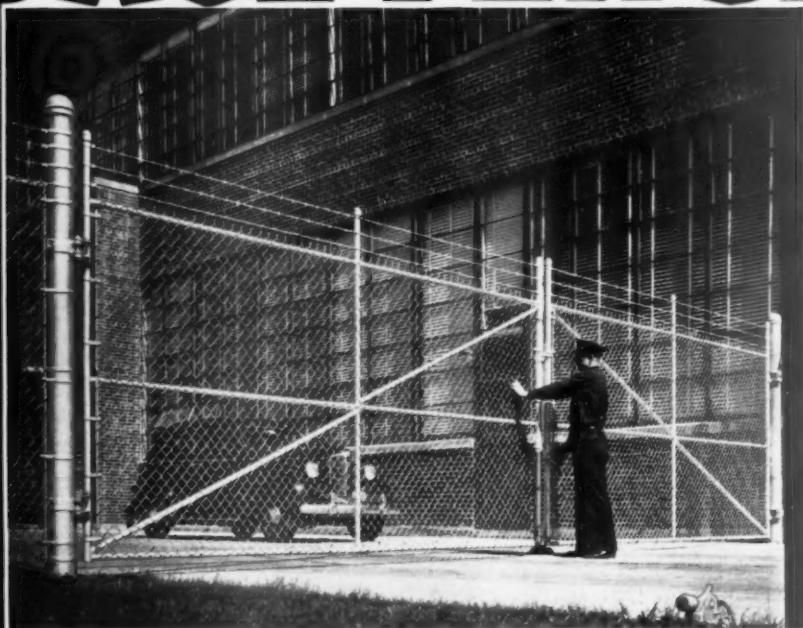


C. R. Miller, Jr.



R. L. VanCleve

PAGE FENCE



IN THIS CASE, 97=100%

● Page Fence Association is composed of 97 factory-trained, long-experienced fence engineers in 97 cities. Each is a local firm permanently interested and responsible. That is 100% fence service—for you! Not only will the local Page Fence expert give you a chain link fence of quality but he will help you choose the right metal—right height—right style. He will erect the fence to give you enduring property protection and fine appearance. His service will insure fullest value for your investment.

Page Fence—truly a reliable product—is available in these superior metals: heavily-galvanized copper-bearing steel—Armco ingot iron—Alcoa aluminum—Allegheny stainless steel. Only Page makes chain link fence of all these metals. The stronger winged-channel post is also an exclusive advantage. Write to PAGE FENCE ASSOCIATION, Bridgeport, Conn., Atlanta, Chicago, New York, Pittsburgh or San Francisco for book, "Fence Facts," and name of nearest representative.



A PRODUCT OF PAGE STEEL & WIRE DIVISION—AMERICAN CHAIN & CABLE COMPANY, INC.

See ACCO advertisement in this issue, page 87

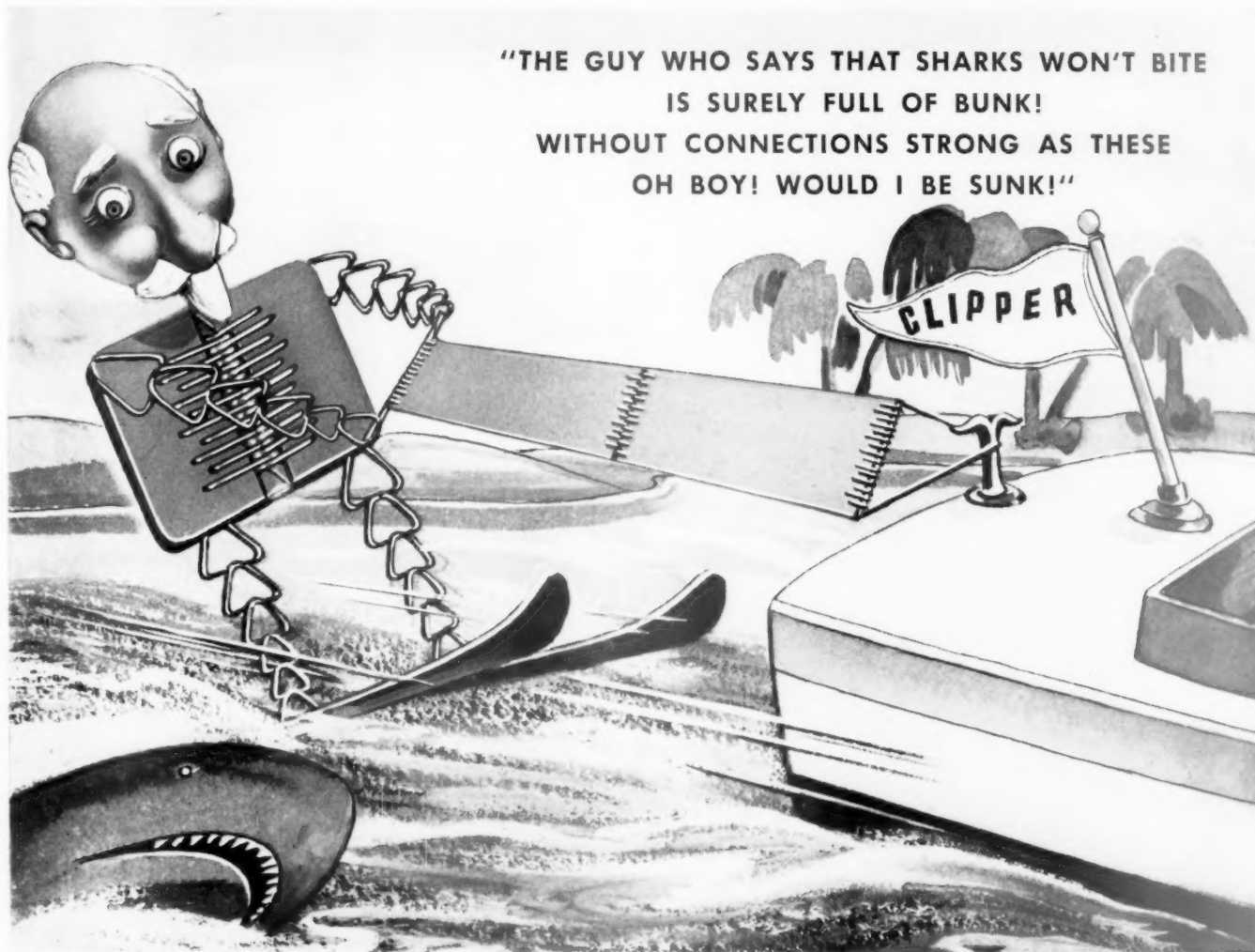
America's First Wire Fence—Since 1883

When writing Page Fence Association please mention Purchasing

Charles R. Miller, Jr., has been appointed Director of Purchases for the United States Steel Corporation of Delaware, with headquarters at the Pittsburgh offices, taking over the purchasing duties of Charles H. Rhodes, Vice President, who has been transferred to Chicago. Prior to his recent appointment, Mr. Miller was Purchasing Agent, Pittsburgh District, for the Carnegie-Illinois Steel Corporation.

Frank J. Rief, Purchasing Agent, Chicago District, Carnegie-Illinois Steel Corporation, assumed the responsibility of all purchases for the company, effective August 15th, continuing to have his offices in Chicago, where he has been identified with the purchasing department since 1916.

R. L. VanCleve, formerly assistant Purchasing Agent, Pittsburgh District, under Mr. Miller, will assist Mr. Rief at the Pittsburgh office, with H. G. Elder serving in a similar capacity at Chicago.



"THE GUY WHO SAYS THAT SHARKS WON'T BITE
IS SURELY FULL OF BUNK!
WITHOUT CONNECTIONS STRONG AS THESE
OH BOY! WOULD I BE SUNK!"

FOR DEPENDABLE BELT CONNECTIONS USE CLIPPER HOOKS AND LUBRIHIDE PINS

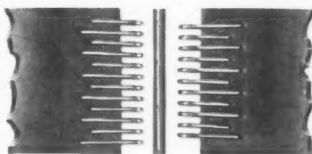
Don't let the sharks of interrupted production get you. Insure your production schedules by lacing your belt with Clipper Hooks and LUBRIHIDE Pins.

Clipper LUBRIHIDE Pins last 2 to 4 times longer than ordinary belt pins. They have the added advantage of BUILT-IN lubrication, making them permanent oil reservoirs. Friction is

absent. Result — pins resist grooving, hooks last longer, and costly delays are eliminated.

REMEMBER — Clipper Hooks and LUBRIHIDE Pins are made for each other. For best results, insist on Clipper products.

CLIPPER BELT LACER COMPANY
Grand Rapids, Michigan, U. S. A.



Each hook is independent, assuring flexibility cross-wise as well as lengthwise. Double staggered points prevent damage to belt.

Copyright 1940, Clipper Belt Lacer Co.



Clipper

• • • BELT LACING

EQUIPMENT • • •

When writing Clipper Belt Lacer Company please mention Purchasing

Frank S. Austin has been appointed Purchasing Agent of the New York Central Lines, succeeding the late C. C. Warne. Mr. Austin entered the service of the Boston & Albany Railroad in 1909, immediately following his graduation from the Thayer School of Civil Engineering, and became Purchasing Agent of that road in 1927, with headquarters in Boston. He became assistant Purchasing Agent of the New York Central Lines in 1935, when the Boston & Albany was consolidated with that system.

Lloyd L. Craden has been named Assistant City Purchasing Agent at Portsmouth, Ohio.

Stephen J. Fuddy has been appointed Purchasing Agent of the Osborn Mfg. Co., Cleveland, succeeding E. W. Doller, resigned. Mr. Fuddy was formerly in charge of the Cleveland purchasing office, and for the past several years has been assigned to the Rubico Brush Co., New York, affiliated with the Osborn organization. He has been active in both the Cleveland and New York Associations.

K. W. Jappe has been appointed Director of Purchases for the Hercules Powder Co., succeeding J. B. Johnson, who becomes assistant general manager of the explosives department, with headquarters at Wilmington, Del.



M. M. POOLE

Major M. Poole, Purchasing Agent for E. C. Atkins & Co., Indianapolis, since 1906, has been named a member of the Board of Directors of that company.



F. E. ROBB

Frank E. Robb has been appointed General Purchasing Agent of the Campbell Soup Co., Camden, N. J., succeeding Philip F. Nieuwkirk.

Joseph F. Drennan has been appointed to the newly created office of City Purchasing Agent at Springfield, Mass., taking office August 1st for a term extending to January 1, 1947. Mr. Drennan has been Purchasing Agent for the American Bosch Corporation, Springfield, for 17 years, and is a past president of the Western Massachusetts Association.

William T. Barton has been appointed Purchasing Agent of the American Bosch Corporation, succeeding Mr. Drennan. He has been with the department eighteen years and previously held the position of Assistant Purchasing Agent.



SURPASSES

**Smooth Surface
Oak in Performance
... Yet Costs No
More!**

Here is a treaded leather belt of special tannage which is low in slip and stretch ... high in pulling power and pliability.

It is a fitting companion to the best belt* that money can buy. Engineered for the drive, or sold in rolls. Get prices and data on OKAY Tred today.

E. F. HOUGHTON & CO.

Chicago—PHILADELPHIA—Detroit

*
Referring to
VIM TRED
LEATHER BELT
of course!



When writing E. F. Houghton & Co. please mention Purchasing

WILLIAMS PRECISION WRENCHES

HOLLOW SCREW WRENCH SET NO. AL 101

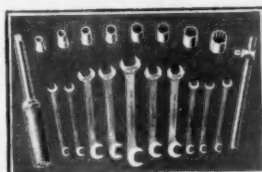


Comprises 19 pieces including Torque "Measurrench", B-21, which indicates proper working load for 1/8 to 5/16" Hex Plug Bits—complete in fitted steel case.

Detachable "Supersocket" Bits and Parts for all Hex Socket Hollow-Screws from 1/8 to 5/8". Chrome-alloy steel, heat-treated and chrome-plated.



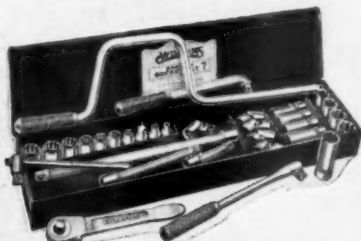
COMBINATION ELECTRICAL SET NO. 1291P



8 Midget "Supersockets", 2 drivers, 1 Midget "Superplier" and 10 Midget "Superrenches"—complete in steel case.

Greatly speeds up delicate adjustment and assembly work. "Superrenches" have two openings of same size but at different angles. "Supersockets" have straight walls for close-quarters work. All are made of chrome-molybdenum steel, heat-treated, chrome-finished.

BANTAM "SUPERSOCKET" SET



Set No. 7 illustrated. 33 pieces, including 24 sockets and 9 Attachments, complete in steel case.

This Bantam pattern set has 3/8" square-drive, providing a minimum of tools for maximum performance on the general run of small work. Chrome-alloy steel, heat-treated, chrome-plated.

● Wherever closely limited torque application is essential, Williams' Torque "Measurrench" No. S-57 provides the answer in terms of a precision tool at moderate price.

No. S-57 "Measurrench" combines new mechanical features with unusually rugged construction. Accuracy does not depend upon delicate gears, levers, or dials, but upon heavy sections of high-tensile steel. Right-hand torque only is measured, but the wrench action reverses for left-hand turning. No. S-57 can be used with any detachable socket having 1/2" square drive opening.

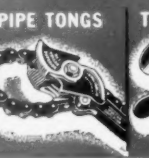
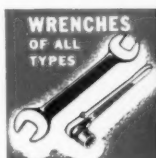
Torque loads are measured either by *sight reading* or by *sound signal* for any desired torque to 200 foot-pounds. Made of alloy and high-tensile steel, scientifically heat-treated and chrome-plate finished with "satin" chrome handle. Over-all length 19-1/2". Sold by industrial distributors everywhere.

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Practical Engineering Help



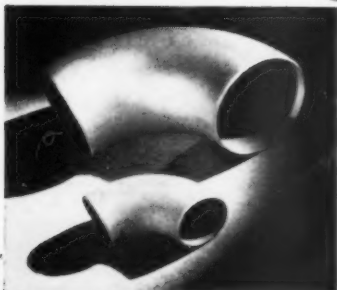
THE members of the Fafnir field engineering staff combine a total of 342 years' experience. This experience - gained, not in a distant "home office," but right in plants where problems are - can effect real dollars-and-cents savings for you. For example:

Fafnir Engineering Service may be able to better your product with a bearing suited to its needs; or lower its cost with a less expensive bearing than the one you now use. It may save you time, by supplying a Fafnir standard bearing instead of a "special," or boost bearing performance by recommending the right seal, shield, or lubricant. It's practical help for any industry - a plus for your plant if you use it. The Fafnir Bearing Company, New Britain, Conn.

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THE BALANCED LINE • MOST COMPLETE IN AMERICA

STAINLESS WELDING ELBOWS



These 11 gauge wall 90° elbows are available from stock in Stainless Type Nos. 308, 316, and 347 in 2", 2½", 3", 4", 5", and 6" I. D. sizes. Write for list prices and description of complete line.

PITTSBURGH PIPING & EQUIPMENT CO. 10 FORTY-THIRD ST.,
PITTSBURGH, PA.

Arthur W. Goodearl, for the past ten years Purchasing Agent for E. A. Pierce & Co., San Francisco, has resigned to join the sales organization of the National Envelope Corp. He has been active in the work of the Northern California Association, serving as treasurer and as chairman of the publicity committee.

Stanley M. Rowland, Assistant Purchasing Agent of the American Hide & Leather Co., Boston, won first honors for the best safety paper written in the 1940 Industrial Accident Prevention Course given by the Massachusetts Safety Council.

Frank H. Walker has been named Purchasing Agent for Allen County, Ind., for a one-year term, succeeding James E. Ford.

Harry Fenner, Purchasing Agent of the Cincinnati Shaper Co., and E. H. Cordes, Purchasing Agent of The E. Kahn's Sons Co., have been named to the important Coal Freight Rates Committee of the Cincinnati Chamber of Commerce.

Carl R. English, formerly Purchasing Agent for the Pacific Coast Co., Seattle, has been advanced to the position of general agent for the company and its subsidiaries, including the Pacific Coast Coal Co., Pacific Coast Cement Co., Pacific Coast Railroad, Pacific Coast Engineering Co., and Pacific Coast Terminal Co. In his new position he will supervise all purchasing, real estate and steamship operations.

J. W. Knowlton of the Duke Power Co., Charlotte, N. C., economic adviser to the Carolinas-Virginia Purchasing Agents Association, addressed the Charlotte Engineers Club last month on, "The Coming Social and Economic Revolution."

Dr. Mack H. Hornbeak, who was last year appointed acting Purchasing Agent for Louisiana State University, Baton Rouge, has been confirmed in that position which has now been placed on a permanent basis by the board of supervisors of the University.

Philippine Purchasing Commission

An Insular Purchasing Agency for the Philippine Islands has been established at New York, under the supervision of Resident Commissioner Joaquin M. Elizalde, and has announced the intention of the islands to purchase two million dollars' worth of commodities in this country each year. The buying program has been planned "to help counteract whatever unfavorable effect the war might have had on American national economy." It is expected that the initial purchasing schedule will be augmented as the Philippine government's own long-range economic program develops. Immediate purchases will include raw cotton, dies and chemicals, tin plates, gypsum bags, sugar bags, and shoe materials, in an amount aggregating close to a million and a half dollars.

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Fig. 5-P. Full Plug Type Globe Valve—for severe throttling service of 150 lb. steam

NOW YOU CAN HAVE THE LONG LIFE AND LOW MAINTENANCE COST YOU WANT IN A THROTTLING VALVE, WITH THE ECONOMIES OF LOW PRESSURE CONSTRUCTION

Constant throttling of saturated and super heated steam at 150 pounds pressure is tough service. And to cut your maintenance cost to the lowest point we developed the **Fig. 5-P**—using the full plug seat and disc construction that is usually associated with higher pressure valves.

Actually, then, the **5-P** gives you longer life in a throttling valve together with the economies of low pressure construction.

The high Brinnell seat and disc is interchangeable

with other full plug valves of the Reading-Pratt & Cady line. The body is of high test bronze permitting the full temperature rating of 550° F. to be applied. Stems are machined from specially heat treated wrought Naval Bronze to resist the galling of threads at the high temperatures.

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Among the ASSOCIATIONS

PURCHASING COURSE ANNOUNCED BY MARQUETTE UNIVERSITY

In cooperation with the College of Business Administration, Marquette University, the Milwaukee Association of Purchasing Agents will sponsor an evening course in purchasing during the fall term. Classes will meet on Thursday

evenings, the first session to be held on September 26. The classes will be directed by Prof. George W. Knick of Marquette and Joseph W. Nicholson, City Purchasing Agent. A feature of the course will be a series of lectures by members of the Association's educational committee.



WE'RE busier than a couple of hives of bees but we want you to know one thing: regardless of the pressure brought about by the increased volume of rush orders for Accurate, we refuse to allow any let-down in the accuracy or quality of Accurate Springs. The activities of the engineering and inspection departments have been intensified to insure this. In other words, we insist upon "making haste slowly", jealously guarding the reputation of Accurate products. Your production schedules have probably been stepped up. You need more than ever this assurance of quality and precision from your sources of supply. Be sure you get it.

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AUGUST 1

BIRMINGHAM—Luncheon meeting of the *Birmingham Association*, at the Redmont Hotel. Speaker: E. W. Schuler, "Benjamin Franklin as a Purchasing Agent."

AUGUST 2

PORTLAND—Luncheon meeting of the *Oregon Association*, at the Mallory Hotel. Motion picture, "Twenty-Four Hour Service."

AUGUST 5

HOUSTON—Annual summer dinner dance of the *Houston Association*, at San Jacinto Inn. J. E. Nolen was chairman of the committee in charge, assisted by L. D. Shaw and D. M. Leyer.

AUGUST 6

AKRON—Annual golf outing of the *Akron Association*, at the Lake Forest Country Club. The outing was attended by several members of the Cleveland and Canton Associations.

AUGUST 8

SEATTLE—Annual golf tourney and dinner of the *Washington Association*, at the Inglewood Golf & Country Club. J. V. Reardon of the Barde Steel Company was chairman of the committee, assisted by A. J. Moir, J. B. Rogers, V. J. Heuertz of Dupont and Jack Lamb of Tacoma.

BIRMINGHAM—Luncheon meeting of the *Birmingham Association*, at the Redmont Hotel. Speaker: John Cole, "Purchasing Systems in Connection with Reception of Salesmen."

AUGUST 9

KANSAS CITY—Annual midsummer outing of the *Kansas City Association*, at the Hillcrest Golf & Country Club. Golf, bridge, dinner and dancing. J. E. Bowes was chairman of the committee in charge.

AUGUST 11

PORTLAND—Annual family picnic of the *Oregon Association*, at the grounds of the Oregon Portland Cement Co., Oswego. The committee included Clarence Slade, Ray Collins, Eugene R. Schmitt, and O. K. Buckner.

AUGUST 13

CHATTANOOGA—Boat ride and dinner of the *Chattanooga Association*. The trip was made on a TVA boat, from the boat harbor at Chickamauga Dam to Harrison Bay.

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STEEL USERS!

NEW SIMPLIFIED PRICE CARDS SAVE TIME... EFFORT...

Make Estimating Easy!

These new warehouse price cards help you figure steel prices quicker . . . easier!

Prices include all possible extras — reduce arithmetic to a minimum. Example: Alloy bar prices include base price, size, and heat treatment extras.

For net price, you simply add the quantity extra

(only two numbers to add, instead of four!).

These time saving price lists are yours gratis.

The set covers Seamless Tubing, Alloy Steels, Strip and Sheet, Cold Finished Bars, Tool Steels, and Stainless Steels. Prices are effective in Middle Atlantic States only. Send for your set today!

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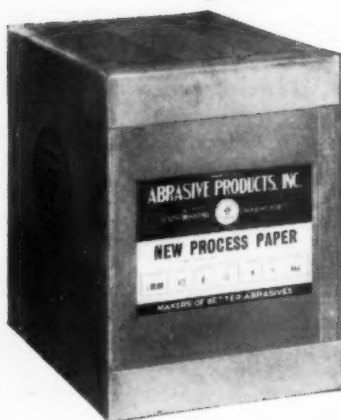
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are "POISON" to the
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**WE SHIP IN
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When you order sandpaper, you want to use all you buy. If part of your shipment is "wilted" by moisture — has edges torn or corners broken by rough handling — you're wasting your money!

Get all you order clean, crisp, factory-new in "Masterpak". This new, exclusive AP container protects coated abrasives against any damage from handling or the weather. Your sandpaper always arrives crisp and fresh as the day we packed it — and you get your money's worth out of every sheet.

It's extra service to you—at no extra cost. Another "plus" for the firm whose 24-hour action on stock orders, 48 on specials, is showing thousands what Service can really mean!

And to prove AP products match AP service, order a ream or 50-yard roll of the AP paper or cloth best suited to your needs. Use up to half of it. If it doesn't boost your production, return the unused portion and you will receive no bill. Abrasive Products, Inc., 523 Pearl St., So. Braintree, Mass.



When writing Abrasive Products, Inc. please mention Purchasing

AUGUST 15

BIRMINGHAM—Luncheon meeting of the *Birmingham Association*, at the Redmont Hotel. Speaker: Jesse Yeates of McKesson & Robbins, "How the War in Europe is Developing American Industries."

AUGUST 16

PORTLAND—Luncheon meeting of the *Oregon Association*, at the Mallory Hotel. Speaker: W. J. Smith, President of the Wild Life Association. Mr. Smith's talk was illustrated with motion pictures of the "Murderers Creek Deer Problem" and other wild life subjects.

SALT LAKE CITY—Annual joint golf outing and dinner party of the *Utah Purchasing Agents Association* and the *Utah Sales Managers Association*, at the Country Club. The committee in charge consisted of O. T. Davenport, Paul D. Dinwoody, and Adrian H. Pembroke.

AUGUST 17-18

SEATTLE—Plant visit of the *Washington Association*, to Seattle's City Light Skagit River project.

AUGUST 19

MILWAUKEE—Second summer luncheon meeting of the *Milwaukee Association*, at the Elks Club. Informal discussion of the business and commodity outlook, led by Gil Hartman.

AUGUST 20

LOUISVILLE—Dinner meeting of the *Louisville Association*, at the New Albany Country Club. Special honor was accorded the past presidents of the association, six of whom were present—R. L. Schmitt, W. M. Kerrick, Ben Y. Heazlitt, L. A. Anderson, T. A. Corcoran, and Louis Hartman. Greetings were read from E. F. Stager, fourth leader of the organization, who is now a Treasury procurement officer at Raleigh, N. C., and unable to attend. An open forum discussion of legal phases of purchasing and the safety of employees was led by Messrs. Kerrick and Schmitt.

AUGUST 22

SAN FRANCISCO—Dinner meeting of the *Northern California Association*, at the Elks Club. Reports of retiring officers, Gavelier initiation rites, and installation of new officers as previously announced. Speaker: Adrian J. Falk, Vice President and General Manager of S. & W. Fine Foods, Inc.

BIRMINGHAM—Luncheon meeting of the *Birmingham Association*, at the Redmont Hotel. George Cole, National Director of the association, led a discussion on "Price Policies of Industrial Purchasing."

AUGUST 23

SCHENECTADY—Plant visit of the *Syracuse & Central New York Association*, at the General Electric Company.



Kitchen in the Clouds

A delightful dinner, a speedy trip and a safe landing—TIMKEN Stainless Steel in the kitchen, TIMKEN Alloy Steels in many vital parts of fuselage, wings and power unit, TIMKEN Bearings in landing wheels, rocker arms and TIMKEN Alloy Steel in landing gears.

TIMKEN **ALLOY STEELS**


Manufacturers of TIMKEN Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; TIMKEN Alloy Steels and Carbon and Alloy Seamless Tubing; and TIMKEN Rock Bits.

The TIMKEN Company is a leading aircraft steel source because TIMKEN has the largest facilities in the world for producing steel that readily meets rigid aircraft specifications.

Whatever you are making, the comparative cost of the steel is so little, you can't afford to buy anything less than the best. Consult us today.

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**STOP THESE HIDDEN LEAKS
THAT WASTE YOUR DOLLARS...**

Hundreds of Plants effect Big Savings
with

Carey
INDUSTRIAL PRODUCTS

MANY industrial plants have hidden profit leaks in the form of waste in production, or excessive overhead. While these leaks may be small in themselves, they may add up to a very costly total.

One pair of bare, 10-inch flanges at 350°F., waste one ton of coal per year.

One foot of bare, 10" steam pipe, heated to 700°F., can cost you heavy heat loss. Figuring steam cost at 30c per million B.T.U., insulation 3½" thick, shows an annual saving of \$25.50 per foot of pipe.

Heat loss, through inadequately insulated pipe, is one of the most common of these hidden profit leaks. Scientific tests show, and hundreds of installations prove, that from 70% to 98% of this loss may be saved by correct insulation.

Fortunately for industry, there is a practical way, not only to find these wastes, but also to eliminate them. The Carey organization is equipped to help you uncover the profit leaks in your plant. A phone call or letter to our nearest branch, will bring a representative.



THIS BOOK TELLS HOW TO REDUCE PROFIT LEAKS

Guides you in making a complete check of your plant from roof to basement . . . tells where to look for waste in power production and in building maintenance . . . how to stop this waste. This book should be on the desk of every factory executive. It is yours for the asking. Send for your copy today, address Dept. 68.

INDUSTRIAL BUILDING PRODUCTS OF ASPHALT—ASBESTOS—MAGNESIA

Roofing . . . Siding . . . Flooring . . . Insulations . . . Roof Coatings and Cements
Waterproofing Materials . . . Expansion Joint . . . Asbestos Paper and Millboard

THE PHILIP CAREY COMPANY • Lockland, Cincinnati, Ohio
Dependable Products Since 1873
BRANCHES IN PRINCIPAL CITIES

E. O. Shreve, General Electric Vice President in charge of sales, and Harry Erlicher, Purchasing Agent, welcomed the visiting buyers. The tour of the plant included the porcelain, turbine, and refrigerator departments, the "House of Magic," and the television studios. Luncheon was served at the Mohawk Country Club. The afternoon was devoted to golf, followed by a dinner meeting.

MILWAUKEE—Summer golf outing and dinner of the *Milwaukee Association*, at the Chenequa Country Club. The committee included T. H. Schultheis, L. B. Greiner, E. L. Wustrack, C. W. Failmeizer, and H. J. Hernsheim.

AUGUST 29

BIRMINGHAM—Luncheon meeting of the *Birmingham Association*, at the Redmont Hotel. Speaker: Don Quisenberry of Acousti Engineering Co., Atlanta, "Sound Control."

AUGUST 30

PORTLAND—Luncheon meeting of the *Oregon Association*, at the Mallory Hotel, followed by an inspection visit to the plant of the Fry Roofing Co.

1 1 1

NEW RAYON FABRICS

Of tremendous importance to the rayon industry, providing new outlets that will substantially increase the demand for spun rayon yarns over the balance of the year, is the development of a number of new fabrics announced within recent weeks. Rayon has been used only to a negligible extent by woolen mills in the past, but the new lines include woolen and worsted fabrics containing a large percentage of rayon, resulting in attractive and unusual materials for dresses and suits.

Another development of major interest is Pliosheen fabric announced by the Goodyear Tire & Rubber Co. This fabric uses a base of either silk or rayon, coated with a synthetic substitute for rubber which makes it waterproof, flame resistant, and soil resistant, a damp cloth being adequate for the removal of most common stains. Light-weight Pliosheen fabrics are sheer and soft, but extremely strong and durable. They can be produced in a wide range of delicate pastel colors, deep tones, or clear white, all of which are sun-resistant and proof against cracking or peeling. They can be printed without technical difficulties, making possible an unlimited array of patterns to harmonize or contrast with surroundings of any specific application.

Exhaustive tests over the past year have demonstrated the adaptability of this material to a wide range of uses including raincoats, shower curtains, umbrellas, drapes, hospital sheeting, oxygen tents, infants' wear, etc. It is also significant that the raw materials of its manufacture are extracted from limestone, coal and salt, natural resources which are available in practically unlimited quantities within the boundaries of the United States.

When writing The Philip Carey Company please mention Purchasing

MARSTERS PROMOTED

Guy L. Marsters, Purchasing Agent of the Norwich Pharmacal Co., Norwich, N. Y., has been appointed manager of the company's eastern sales division and special sales division, succeeding T. F. Currans. Mr. Marsters will continue to supervise the company's buying as Director of Purchases.

MARTIN ADVANCES

George W. Martin, formerly Purchasing Agent of the Dallas (Texas) Gas Co., has been promoted to the position of general superintendent for the company. Mr. Martin became Assistant Purchasing Agent in 1923, and Purchasing Agent in 1926. Six years ago he was named safety director and assistant general superintendent. An active member of the Dallas Purchasing Agents Association, he served as its secretary for several years and was president in 1934.

RAILWAY PURCHASES ARE UP

Capital expenditures of American railways in 1940 will probably set a new high record for the past ten years, and will approximately double the expenditure of 1939, when Class I railroads spent slightly more than 262 million dollars on equipment, roadway and structures. An indication of this trend was seen at the very beginning of the year, when the amount of unexpended authorizations for capital improvement was not far below the total of the entire previous year's spending. Taking into consideration the record of the first half of 1940, and reports on projects contemplated or actually under way, the present estimate is that 525 million dollars will go into such improvement and expansion before the end of the year.

There is also a marked increase in maintenance activities and expenditures, the estimated total being in the neighborhood of one and a quarter billion dollars, or 5% increase over the previous year. It is likely that this ratio will be further increased, possibly to an increase of 10%. Ralph Budd, transportation member of the National Defense Advisory Commission, has reported a general agreement of the members of the Association of American Railroads to step up car repair work so that the number of bad-order cars would be reduced from the current ratio of 9% to a number not in excess of 6%.

A notable change in the character of construction and maintenance activity has been noted in contrast to the earlier time when the laying of new track was a principal item in the construction budget. It is now pointed out that even with the accelerated program, the past year saw only 55 miles of new track laid, while 1,500 miles were abandoned. Attention now is turned to such projects as replacing light rails with heavier types, straightening curves on right of way, installation of streamlined equipment, more efficient terminal equipment, grade separations and elimination of highway crossings, better traffic control, and increased roundhouse facilities.



IT WILL PAY YOU TO CHECK UP ON THIS LATEST HAND LIFT TRUCK

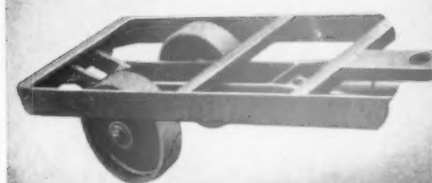
..and here's why

The new Transliftor, universal lift, multi-stroke, heavy duty, hand lift truck, incorporates into its design the findings of years of research directed toward better construction and more efficient operation. It will carry heavier loads* at less cost and with less effort. Note these Transliftor advances:—

1. **Hydraulic release check** ... never drops a load. Its cushioning action gradually lowers the load, safeguarding it, the truck, operator and floor.
2. **Telescopic bar frame** ... gives greater floor clearance. Platform rails are located outside the frame rails for better support.
3. **Selective lift** ... This lift has a pump action moving in an oil bath for easier operation, and permits either full strokes for quick lifts, or short strokes for heavy loads.
4. **Torsion-type rear link** ... provides greater stability to the load, acts as a side sway eliminator and reduces wear.

Your Yale representative (he's listed in your classified telephone directory) will be glad to tell you of other Transliftor features. Ask him about the universal lift, replaceable bearings, free handle control, and machine faced roller bearing steel wheels. Or write to us direct.

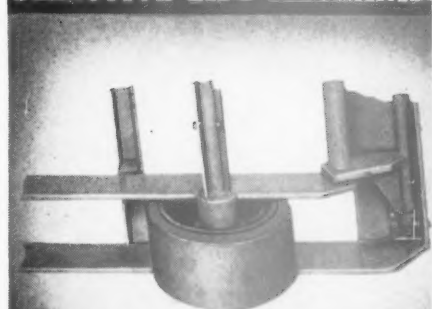
* Capacities 3,500 to 5,000 lbs.



TELESCOPIC BAR FRAME



SELECTIVE LIFT MECHANISM



TORSION-TYPE REAR LINK

THE YALE & TOWNE MFG. CO.

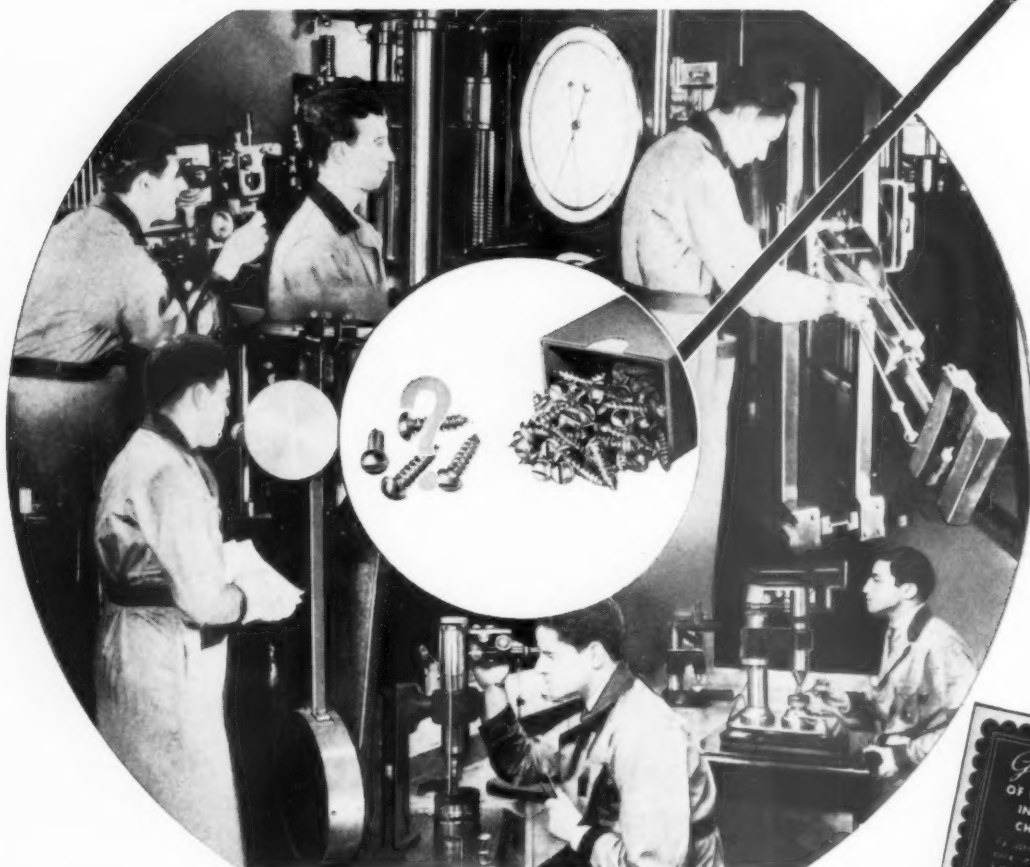
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Makers of Yale Hand Chain Hoists, Electric Hoists, Electric Industrial Trucks, Hand Lift Trucks and Skid Platforms.

NO "Doubtful Few" CAN SLIP THROUGH



Parker-Kalon's unique Quality-Control Laboratory rules out "doubtful" screws that threaten fastening jobs

PUT Parker-Kalon Fastening Devices on your assembly line and you'll end troubles with the "Doubtful Few" . . . those few imperfect units in a box that won't drive properly or make satisfactory fastenings. Such screws are ruled out by Parker-Kalon's scientific "3rd degree" of tests and inspections.

A \$250,000 Quality-Control Laboratory that has no counterpart in the industry has made it possible to

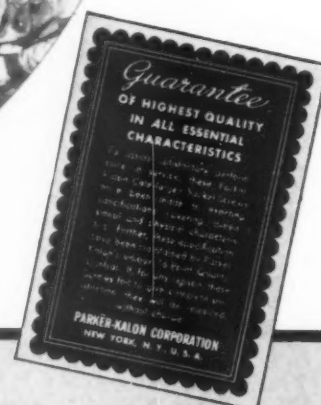
hold Parker-Kalon Hardened Self-tapping Screws, Socket Screws, and other fastening devices to higher standards than ever before could be attained. Precision equipment controls every step in production. "Doubtful" units *can't* slip through!

Specify PARKER-KALON on your next order . . . get fastening devices guaranteed by the most modern plant in the screw industry. Parker-Kalon Corp., 202-204 Varick St., New York.

SOLD ONLY THROUGH RECOGNIZED DISTRIBUTORS

Quality-Controlled

PARKER-KALON
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COSTS NO MORE to get this Parker-Kalon Quality-Control Guarantee with every box of . . .



Hardened Self-tapping Sheet Metal Screws

Sizes and head styles for assembling light and heavy sheet metal



Hardened Screwnails

For fastening sheet metal to wood securely

Hardened Masonry Nails

For fastening to brick, mortar, concrete, etc. easier and quicker



When writing Parker-Kalon Corp. please mention Purchasing

Voluntary Priorities

THE National Defense Advisory Commission has announced that a survey which it has made discloses no present need to invoke legal authority to enforce priorities on government defense orders.

The Commission, however, has requested Assistant Secretary of War Robert P. Patterson, and Assistant Secretary of the Navy Lewis Compton, co-chairmen of the Army and Navy Munitions Board, to adopt a system of preference classifications designed to indicate the order in which the Army and the Navy require contracts to be executed by industry. The Commission has been informed that the priorities committee of the Army and Navy Munitions Board (Room 2008, Munitions Building, Washington, D. C.) will establish rating of contracts by preference classifications within a few days.

Legal authority to enforce such priorities was given the President in Section 2(a) of Public No. 671, signed June 28, 1940, which in part provided that in the discretion of the President, Army and Navy contracts shall take priority over all deliveries for private account or for export.

Continuance of the proposed voluntary system depends on complete voluntary co-operation of Government and industry to assure completion of contracts on specified delivery dates and in accordance with the order of importance established by the strategic needs of the Army and Navy. The Commission favors continuance of the voluntary system until it appears that more authoritative measures are required.

Briefly, the system of preference classification will operate as follows: As far as may be considered necessary, each contract placed with private industry, or each order assigned to arsenals or navy yards, will bear a preference classification determined and assigned under direction of the Army and Navy Munitions Board.

General preference classifications to be employed are: Class AA, reserved for future emergencies of exceptional nature, and Class A, consisting of such Army and Navy orders as require preferred treatment. Each of the above general classifications will in turn be subdivided as far as may be necessary: for example, AA1, AA2, A, A2, etc.

In addition to the preference classification each Government contract or order will also carry a desired date of delivery and delivery date is the primary consideration.

A high preference rating does not mean that work on or delivery of orders bearing a lower classification or orders for private account or for export should be delayed, unless necessary to meet the delivery date on the order bearing a superior preference rating. As long as the delivery dates are met, details of adjustment will be left primarily to industry itself. It was stated that the Army and Navy, and the Defense Commission will, of course, be ready to assist in such adjustment.

There is little likelihood of shortages in most important materials and equipment used for the munitions program. It was expected that normally supplies would be obtainable through regular purchasing channels and that in most cases the contractor would experience little difficulty in obtaining his requirements from sub-contractors and other suppliers.

In cases where supplies may prove to be somewhat less readily available, it was believed that in many instances the contractor will himself be able to make arrangements with his suppliers to fill orders on the scheduled date by calling attention to the preference rating on his contract together with the deadline which he has to meet.

If a problem should become acute and the contractor becomes convinced that supplies will not flow to him at the required time, he should refer the case to the Army and Navy Munitions Board either directly or through the government inspector. In cases where the Board is unable to adjust the problem, it will be immediately referred to the Co-ordinator of National Defense Purchases, who will then take such action as he may deem advisable in the particular instance, including invoking the assistance of staff members of the Advisory Commission to the Council of National Defense, industry groups, or other agencies.

All agencies connected with the national defense program, including the Commission, the Co-ordinator of National Defense Purchases, and the Army and Navy Munitions Board, are meanwhile directing their efforts to preventing creation of acute situations which might cause delay.

Allis-Chalmers **RULE OUT DOUBTFUL SCREWS!**



No "doubtful" screws for this transformer case

THEY SPECIFY QUALITY-CONTROLLED PARKER-KALON SOCKET SCREWS

Careful buyers like Allis-Chalmers take no chances on "doubtful" socket screws in their equipment. They specify Parker-Kalon and escape the "doubtful few" . . . those few imperfect screws in a box that might delay assembly work or fail in service.

Parker-Kalon Socket Screws are produced under a rigid control routine made possible only by Parker-Kalon's unique Quality-Control Laboratory. Sixteen exacting tests and inspections insure that every screw in a box is "better than good enough."

Specify Parker-Kalon next time . . . they cost no more. Look for the Quality-Control Guarantee that vouches for their extra quality. For free samples and local distributor's name, write: Parker-Kalon Corp., 202-204 Varick Street, New York.



Quality-Controlled

16-point test and inspection routine covers: Chemical Analysis; Tensile and Torsional Strength; Ductility; Shock Resistance under Tension and Shear; Hardness; Head diameter, height and concentricity; Socket shape, size, depth and concentricity; Class 3 Fit Threads; Clean-starting Threads.



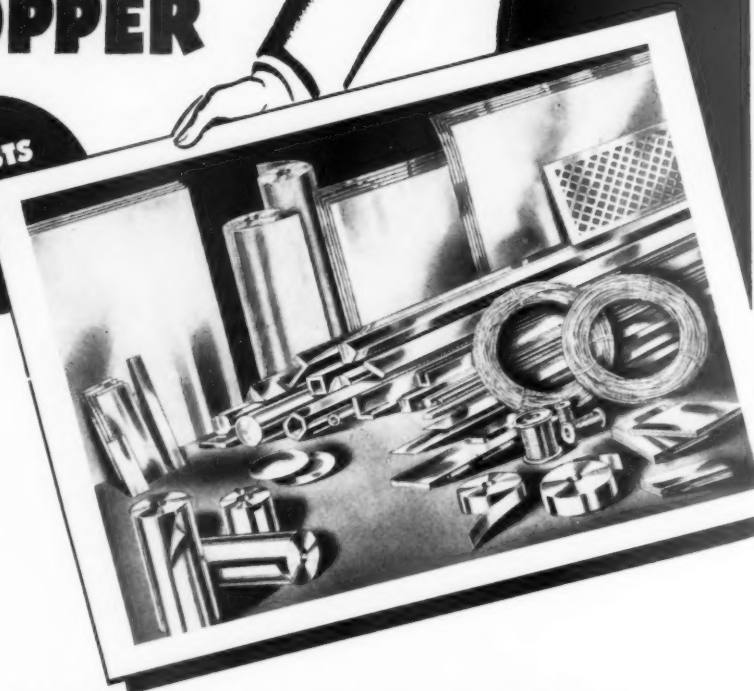
PARKER-KALON
COLD-FORGED
Socket Screws

When writing Parker-Kalon Corp. please mention Purchasing

*Quality-Wise
Buyers*

ARE SPECIFYING
HUSSEY
PURE LAKE
COPPER

IT COSTS
NO
MORE



Pure Lake copper has always been recognized among copper buyers as a premium grade copper. Mined from the rich, natural copper deposits of the Great Lakes, Pure Lake copper is just naturally superior yet its cost to you is no greater, because Hussey controls production 100 per cent from mining and refining to rolling and marketing.

C. G. HUSSEY & COMPANY

(Division of Copper Range Co.)

Rolling Mills and General Offices: Pittsburgh, Pa.

Warehouses in Principal Cities

Copper

HUSSEY

Brass

When writing C. G. Hussey & Company please mention Purchasing

Obituary

John C. Storey, 60, Pacific Coast Purchasing Agent for the Shell Oil Company, died July 27th at Mills Memorial Hospital, San Mateo, Cal., after a brief illness. Mr. Storey joined the Shell organization in Portland 28 years ago, and has been Purchasing Agent at San Francisco since 1923.

Walter H. Weston, 49, Purchasing Agent for the American Woolen Company at Burlington, Vt., was drowned July 27th while swimming in Lake Champlain.

Orloff O. Dixon, 61, for many years Purchasing Agent for the Interborough Rapid Transit Company, New York, prior to his retirement from active business in 1938, died at his home in Clifton, N. J., July 27th.

Earl A. Snoddy, 50, Purchasing Agent for the Blackhawk Foundry & Machine Co., Davenport, Iowa, died at his home in that city, July 28th, following a brief illness.

George R. Niday, 37, for the past twelve years Purchasing Agent for E. F. Hutton & Co., Los Angeles, died at the Hollywood Hospital, July 30th, of a heart ailment.

Charles W. Whitney, 64, for more than fifteen years Executive Secretary of the Purchasing Agents Association of Northern California and editor of the *Pacific Purchaser*, died at his home in San Francisco, August 8th, as a result of heart strain. A graduate of the University of Michigan, and trained as a mechanical engineer, Mr. Whitney entered purchasing work with the Yuba Mfg. Co. of San Francisco and was an active member of the Northern California Association for several years before taking over the executive direction of the organization. Civic minded, he served for sixteen years as chairman of the Berkeley Chapter of the American Red Cross and was a Scoutmaster for eighteen years.

Frank D. Bryant, 60, District Purchasing Agent for the Standard Oil Company of California at San Francisco up to the time of his retirement a few months ago on account of ill health, died August 17th. Mr. Bryant had been associated with the company since 1906, starting in the marine department but transferring to purchasing work in 1909. He became District Purchasing Agent in 1922. Active in the work of the Northern California Association, he served two terms as president of that organization, and was chosen Vice President of the National Association of Purchasing Agents, representing the Pacific Coast associations. He was general chairman of the convention committee for the N.A.P.A. meeting in San Francisco last year. Widely known and highly esteemed among purchasing men, he received a further signal honor when the American Petroleum Institute earlier this year named him the "grand old man" of the industry, in the purchasing division.

**TRU-LAY
PREFORMED
WIRE ROPE**
a Primary Product
of American Chain & Cable

OTHER
ESSENTIAL PRODUCTS
OF
AMERICAN CHAIN & CABLE CO., Inc.

- ★
- CHAIN**—Weed Tire Chains
Welded & Weldless Chain & Attachments
AMERICAN CHAIN DIVISION
- CABLE**—Tru-Lay Preformed Wire Rope and
Crescent Non-preformed Wire Rope
Tru-Loc Fittings—Tru-Lay Control Cables
AMERICAN CABLE DIVISION
- BRAKES**—Tru-Stop Brakes for Trucks & Buses
Tru-Level Oil Controller
AMERICAN CABLE DIVISION
- CUTTING MACHINES**—Wet Abrasive
Cutting Machines—Nibbling Machines
ANDREW C. CAMPBELL DIVISION
- CHAIN BLOCKS**—and Trolleys
FORD CHAIN BLOCK DIVISION
- WIRE ROPE**—Lay-Set Preformed Wire Rope
Nonpareil Non-preformed Wire Rope
"Korodless" (Stainless Steel) Yacht Rigging
Aircraft Control Cables
HAZARD WIRE ROPE DIVISION
- AUTOMOTIVE EQUIPMENT**—for
garages and service stations
MANLEY MANUFACTURING DIVISION
- SPRINGS**—Owen Springs and Units for Mat-
tresses and Furniture
OWEN SILENT SPRING COMPANY, INC.
- FENCE**—Page Fence, Wire and Rod Products,
Welding Wire
PAGE STEEL AND WIRE DIVISION
- VALVES**—Brass, Iron and Steel—and Steel
Fittings
READING-PRATT & CADDY DIVISION
- CASTINGS**—Electric Steel Castings and
Malleable Iron Castings
READING STEEL CASTING DIVISION
AMERICAN CHAIN DIVISION
- HOISTS and CRANES**—Wright Chain
Hoists, Electric Hoists, Cranes
WRIGHT MANUFACTURING DIVISION



Here's a job
as tough as any that
Industrial Preparedness
puts up to
TRU-LAY WIRE ROPE

"BULLDOZER"—Grand Coulee dam provides the laboratory-in-practice for one more demonstration of the outstanding supremacy of Tru-Lay Preformed Wire Rope. . . . Scarcely visible from the outside, Tru-Lay is a vital, inner factor in the steady and unflinching operation of this huge "bulldozer". . . . Here again Tru-Lay has proved its steadfast resistance to bending strains of small sheaves—severe abrasion from dirt and rock dust—instantaneous over-loads. . . . Check Tru-Lay where you like. Study its performance where the going's toughest—where dependability is a "must." You'll find that Tru-Lay *stands up*. . . . For the hard jobs specify Tru-Lay and other ACCO Pedigreed Products. A few of the 137 are listed at the left.

AMERICAN CABLE DIVISION

AMERICAN CHAIN & CABLE COMPANY, Inc. BRIDGEPORT CONNECTICUT

INDUSTRY



Serving
AGRICULTURE



TRANSPORTATION



When writing American Cable Division please mention Purchasing



The

IDEAL MIMEO PAPER

WRITE AT ONCE for free test package of INTERNATIONAL MIMEO SCRIPT. When you receive your big, informative, blue and white test package of INTERNATIONAL MIMEO SCRIPT, note its seven points of excellence...

1. Fine appearance.
2. Freedom from fuzz.
3. Excellent duplicating quality.
4. It is ideal for letter press and offset printing.
5. Takes pen and ink signatures.
6. Has surprising strength.
7. Is moderately priced.

SEND TODAY for your free package on your business letterhead.

Address Sales Dept. R

INTERNATIONAL PAPER COMPANY

220 E. 42nd St., New York, N. Y.

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BOSTON · CHICAGO · CLEVELAND

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Mimeo Script*



AN INTERNATIONAL PAPER VALUE

Made by the Makers of: ADIRONDACK BOND & LEDGER • INTERNATIONAL MIMEO-SCRIPT • INTERNATIONAL DUPLICATOR • BEESWING MANIFOLD • TICONDEROGA BOOK • TICONDEROGA TEXT • INTERNATIONAL TI-OPAQUE • CHAMPLAIN BOOK • SARATOGA BOOK • SARATOGA COVER • LEXINGTON OFFSET

INDUSTRIAL EQUIPMENT MUST BE MODERNIZED

In evaluating the preparedness of industry to meet the requirements of the armaments program, the steel producing industry, attention has been called to the bottleneck known to exist in processing capacity. The primary producing industry is acknowledged to be in the best position ever existing. Approximately a billion dollars have been spent during the past five years on plant and equipment, so that the industry is at the highest point of technological development in its history and at an all-time peak of rated steel-making capacity. Even with the development of extraordinary demand, the industry is in an excellent position to supply the needed raw material, particularly in view of the fact that the ultimate demand will necessarily lag somewhat due to inadequate finishing and processing capacity, so that a certain amount of time will be available for further expansion where the necessity is indicated.

A considerable proportion of expansion in recent years has been in the lighter lines—notably in sheets, wide strip, and tin plate, where the industrial demand has been most insistent. The heavier steels have not participated in this development to so great an extent, and since such capacity would largely be concerned with the special requirements of the defense program rather than with any normal or continuing requirement, it is probable that this phase of expansion will be considered only on the basis of governmental financing of new plant and capacity or upon whatever plan of liquidation of private investment is ultimately decided upon.

Outstanding among the technological developments of the past few years have been the electric furnace and the continuous process for producing sheets and strip steel.

The situation is much more acute, however, in the fabricating industries, which represent in the aggregate almost one-fourth of all United States industry. Replacement of equipment and expansion of fabricating capacity has fallen far short of the record established in the primary industry, relatively little being done in this way during the depression years of 1930-1935, so that obsolescence has been exceptionally high. Consequently the fabricating industries are in a relatively poorer position to meet the present emergency than they were a decade ago.

The age of equipment is not the sole factor determining its efficiency from a technological point of view, but it provides a convenient yardstick by which to judge conditions. And that yardstick shows that the situation has steadily retrogressed over a considerable period of time. In 1925, a survey of plant equipment cited by government researchers showed that 44% of all metal working equipment was over ten years old. In 1930, the figure had risen to 48%. In 1935, the ratio was 65%, reflecting the reluctance of plants to modernize during that period. And in 1940, the ratio has again risen, to 70%.

When writing International Paper Company please mention Purchasing

Within easy reach- 260 distributors



There are some 260 Bethlehem Wire Rope distributors located in key supply centers throughout the United States. They stock ropes to fit the needs of users in their localities and are always ready to "hop-to-it" when your call comes in.

Next time you need top-notch wire rope and need it fast, call the Bethlehem distributor in your section.

BETHLEHEM STEEL COMPANY



When writing Bethlehem Steel Company please mention Purchasing



MISTER, YOU'VE GOT SOMETHING!

Right he is! Paintcil—for permanently marking materials exposed to the elements—is *something*! Eliminates the cumbersome, costly paint bucket and brush method. Handy as a pencil to carry. Can be used on any hard surface, such as wood, metal, glass, etc.

Exposed indefinitely to the elements, markings remain as sharp and clear-cut as the day they were made.

Distinctive types for marking *hot* metals, too!

ASK YOUR JOBBER OR WRITE US DIRECT

If your jobber doesn't handle Paintcil, write direct for samples and full details. Simply say which type you want — for *hot* markings or *cold* markings.

PAINTCIL

Paint in Stick Form

HELMER-STALEY, INC. 323 W. Huron St., Chicago, Ill.

When writing Helmer-Staley, Inc. please mention Purchasing

That some steps have been taken to remedy this defect is shown by the business record of the machine tool industry, which has shown a moderate increase from year to year, though approximately half of its production was intended for foreign markets. But even in this industry itself a reluctance to undertake plant expansion and modernization has been noted, and the pressure of the demand which has developed with a rush in recent months is reflected in several situations and policies such as the farming out of parts orders, the purchase of machinery from one another, and the diversion of other related industries to the manufacture of production machine tools. The vital nature of this situation is indicated by the fact that machine tool manufacturers are rated at the top of the preferential list for deliveries from their own industry, taking precedence even over the aircraft industry, which is generally regarded as the key point in our program of national defense.

Plant expansion in the machine tool industry is now at a high rate, construction projects in this field being currently released at the rate of two per week, according to architects' and builders' reports.

1 1 1

LIMITATION PLACED ON COTTON FUTURES TRADING

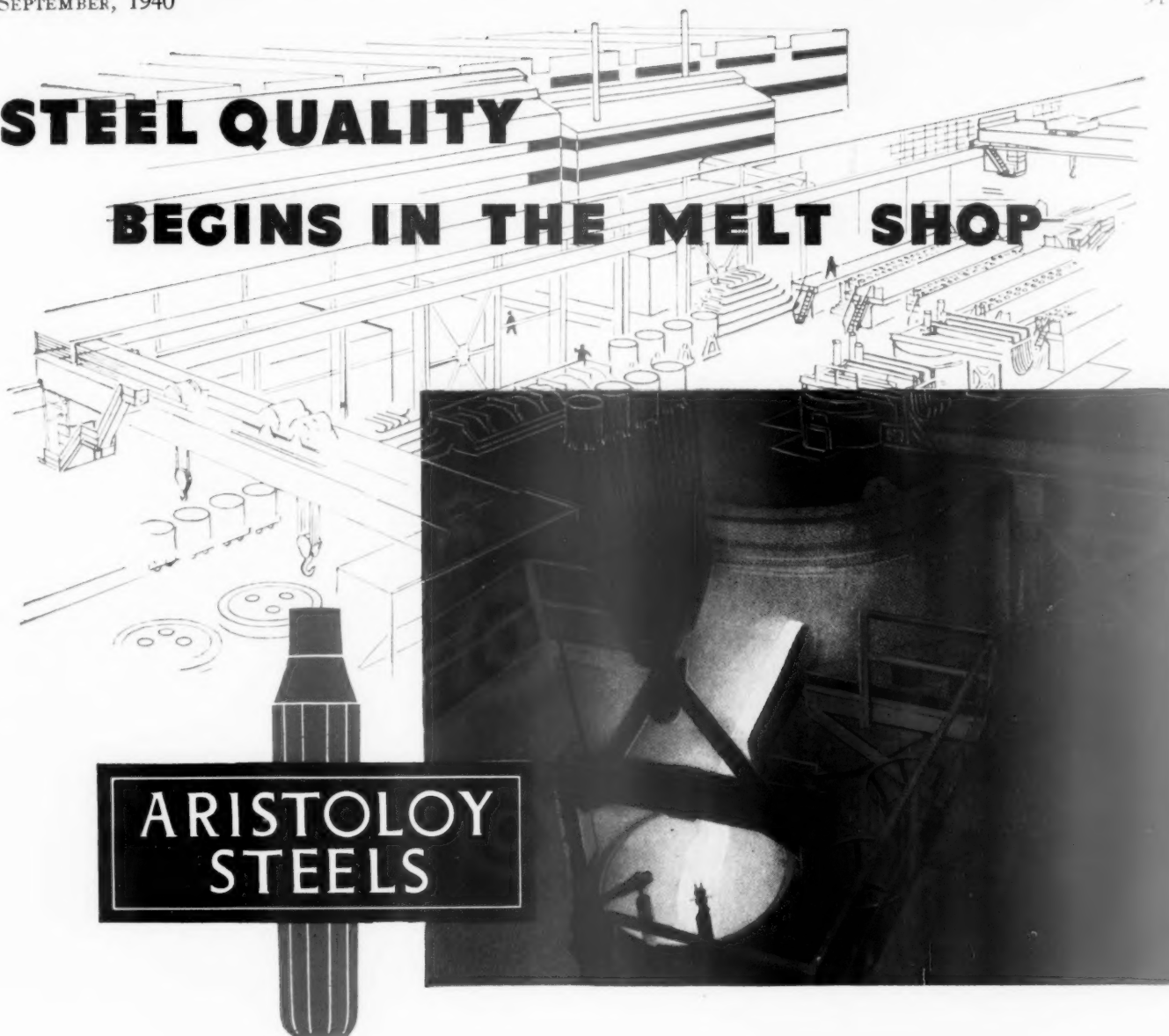
Effective September 5, a limit of 30,000 bales was placed on daily trading and net positions in speculative cotton futures transactions, by order of the Commodity Exchange Commission. The ruling has been made to prevent excessive speculation in cotton futures, and will not affect market positions acquired in good faith prior to the effective date. The limits also are not applicable to *bona fide* hedging transactions, nor to straddle operations except during the delivery month. The restrictions upon straddle trades and positions in the delivery month are expected to prevent artificial price distortion between futures such as might result from concentrated holdings in the near month.

The Commodity Exchange Commission has been considering the question of establishing speculative trading limits for about a year, and held hearings on the subject in New York and New Orleans last October. The Commission consists of the Secretary of Agriculture, the Secretary of Commerce, and the Attorney General.

Observers in the trade point out that the trading limits are considerably above any actual speculative position seen in the market during recent years, and therefore have little practical significance so far as altering present practice is concerned. They may, however, affect the regular business of cotton merchants, who customarily sell to mills for shipment over a period of months, the mill retaining the option of choosing the price prevailing at any time during the delivery period. The merchant then hedges by buying futures contracts pending the purchase of actual cotton. The effect on this practice will depend

STEEL QUALITY

BEGINS IN THE MELT SHOP



**ARISTOLOY
STEELS**

The "Aristoloy" melt shop is equipped with top-charged electric furnaces of the latest design. Selected scrap is segregated in bins in the adjacent stock house and loaded into large charging buckets, handled by a transfer car and crane. Complete charging is accomplished in less than 15 minutes.

Relatively small furnaces simplify the accurate and uniform control of all phases of melting. These furnaces are equipped with the largest transformers (in rated capacity) which have so far been used on this type of furnace. High transformer capacity results in a very rapid melting of the charge. By thus saving time in charging and melting, a longer time is available for the all-important refining period.

"Aristoloy" steel quality begins in the modern "Aristoloy" melt shop.



COPPERWELD STEEL CO.

Warren, Ohio

ARISTOLOY

S.A.E. ALLOY BILLETS AND BARS; OXIDATION AND CORROSION
RESISTING STEELS; TOOL AND SPECIAL STEELS; AIRCRAFT QUALITY STEELS; STAINLESS STEELS

When writing Copperweld Steel Co. please mention Purchasing

on whether the Commission interprets such transactions as bona fide hedges or will limit them to 30,000 bales beginning with the first notice day in any one delivery month.

GOVERNMENT WILL BUY MORE RUBBER IN 1941

The Rubber Reserve Co., set up by the government to acquire reserve stocks of rubber in this country, has completed an agreement with the International Rubber Regulation Committee providing for the purchase of an additional reserve stock of rubber in 1941, up to 180,000 tons. The price as named in the agreement will range from 17 cents to 18½ cents per pound, f.o.b. transoceanic ships at point of shipment.

With this addition, reserve stocks will amount to more than 400,000 tons, con-

sisting of 85,000 tons acquired through the barter agreement with Great Britain in exchange for cotton, 150,000 tons which the Rubber Reserve Co. has agreed to buy during the balance of this year under a previous arrangement with the International Rubber Regulation Committee, and the 180,000 tons called for in the present transaction. The Reconstruction Finance Corporation has authorized additional loans amounting to 75 million dollars to the Rubber Reserve Co., for the purchase and carrying of the new supply.

TRADE BARRIERS ATTACKED

The Department of Commerce has inaugurated a vigorous campaign for the elimination of interstate trade barriers, under the direction of James W. Young, Director of the Bureau of Foreign and

Domestic Commerce. The campaign will be educational and promotional in nature, and will be carried on through the thirty-one field offices of the Bureau.

One phase of the program is the promotion of economic research on various phases of the trade barrier problem among the faculties and graduate students of nearly one hundred colleges and universities throughout the country. According to Mr. Young, the collection of such specific examples of trade barriers, their origin, operation and effect, is particularly important because no complete economic data has been available heretofore, and the study of a large number of cases is deemed the best possible basis for estimating the impact of such barriers upon our national economy.

Field offices of the Bureau, located in the leading commercial centers of the country, are also instructed to work with business organizations such as the Chambers of Commerce, in collecting local examples of laws and regulations which impede the free flow of interstate commerce. An invitation has been extended to business men and business groups affected by such practices to bring their problems to the Bureau for study.

On the basis of the information thus obtained, a widespread distribution of factual data is planned, bringing to the attention of business and civic organizations the gravity of the problem and suggested remedial action.

Up to the present time, the most effective agency in combatting the movement toward economic isolation among the states and discrimination against out-of-State products, has probably been the Council of State Governments, which has arranged conferences between contiguous states to eliminate sources of friction. In forty-four states, Commissions of Interstate Cooperation have been established, with representatives from legislative and administrative departments, working through the Council to secure the defeat of pending trade barrier legislation and the repeal of discriminatory laws already in effect.

It is significant to note that no additional restrictive laws were enacted at the last sessions of state legislatures, and a number of existing laws have been repealed. But although the trend may appear to be halted, literally hundreds of trade barrier acts remain on the statute books and are exerting a harmful influence on trade. It is frequently difficult to determine whether a particular measure is actually a public health or safety measure or is in fact intended primarily to shield local industry from out-of-State competition. To weigh each individual case impartially in the light of national as well as local interest, the cooperation of federal departments should be a very wholesome influence.

Among the types of regulation which are under close scrutiny at the present time are the use of State license fees and excise taxes, labelling laws, restrictive inspection requirements, special registration fees, mileage and gasoline taxes imposed at "ports of entry" at state borders, affecting trucks in interstate commerce.

RELIABLE EQUIPMENTFOR A WIDE VARIETY OF SHOP REQUIREMENTS

The advertisement features a collage of various industrial tools and machinery components. Labels are placed over different sections of the collage to identify the items:

- MACHINISTS' TOOLS**: Located in the top left corner, pointing to a collection of hand tools like wrenches and sockets.
- CUTTERS**: Located in the top center, pointing to various types of cutting tools and bits.
- SCREW MACHINE TOOLS**: Located in the top right, pointing to tools used in screw machine operations.
- PUMPS**: Located in the middle left, pointing to different pump models.
- VISES**: Located in the middle right, pointing to various types of work vises.
- ARBORS and ADAPTERS**: Located in the bottom left, pointing to long, cylindrical machine components.
- MISCELLANEOUS EQUIPMENT**: Located in the bottom right, pointing to a variety of other industrial parts.

In the center of the advertisement, there is a text block:

Economical Manufacture and Fast Production depend on the Reliability of Your Equipment.

Ask for No. 33 Catalog

B S Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

BROWN & SHARPE

Governmental Purchasing Notes

Boston—Following a report and recommendations by industrial engineers, Mayor Maurice J. Tobin has instructed the Municipal Survey Committee to install an inventory control system for five City of Boston institutions which together purchase more than \$1,600,000 worth of consumable supplies each year. The system will affect the following institutions: Boston City Hospital, Mattapan Sanitarium, Long Island Hospital, Deer Island, and Suffolk County Jail.

Heretofore the Supply Department has had no accurate check immediately available on supplies on hand and no provision for inspection of the quantity of materials delivered on orders. The proposed system will establish maximum and minimum quotas of commodities to regulate the amount of each item to be kept on hand. It also sets up an accounting system for stock control and provides an immediate record of materials in stock.

The industrial engineers, who have been engaged by the city, will also draw up the forms required for the stores and record systems. The installation of the system, setting it in motion, and training city employees in the work, will be a WPA project.

1 1 1

Baton Rouge—Centralization of purchases is one of the vital policies to be established in Louisiana under the Jones administration. Three major state agencies—Louisiana State University, the Highway Department, and the newly created Department of Institutions—are exempted from the general order, but will set up centralized purchasing departments of their own following the general pattern of the state purchasing department, and coordinated with the general program through supervision by the financial director, the Governor, and by the new Citizens Advisory Board.

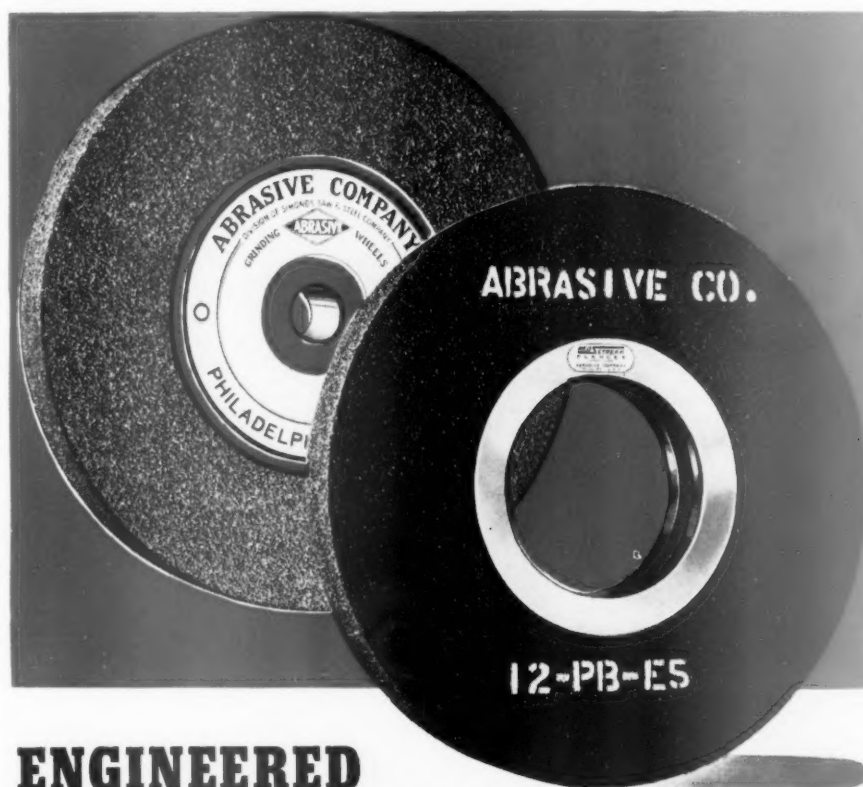
The function of the State Purchase Director is described as a dual responsibility, that of "watch-dog over the expenditure of state funds and bird-dog seeking the most favorable sources and terms of purchase."

It is predicted that the new department will show unusual savings to the state, amounting to as much as 25 or 30%, because of the extreme laxity that has heretofore prevailed.

Under the new regime, officials of state agencies will not be permitted to make any purchase without approval of the purchasing division of the new Finance Department, and department head will be unable to influence the choice of firms to supply their requirements. Their authority ends when they have made out the requisition for their needs, on purchasing department forms. Information regarding probable requirements will be called for as far as possible in advance, to permit the maximum of long-range planning of purchases. The purchasing department will keep track of supplies on hand in storehouses;

will make large scale contracts covering basic materials for all departments; will maintain full lists of available suppliers together with data on their facilities and financial responsibility; will compile records on past purchases, grades and qualities, prices and average costs, and the State's experience with each type of supply. The purchasing agent is required to provide full notifications of the letting of contracts and opening of bids, and is empowered to reject bids and call for new bids if the original offerings are deemed unsatisfactory.

Newark—Formation of a Department of Central Purchase for the Newark Housing Authority is planned by Director Neil J. Convery. Fred Collins has been designated as the purchasing officer, under the direct supervision of Mr. Convery. Under the proposed set-up, competitive bids will be required on each purchase. On purchases up to \$50, three telephone bids will be required; on purchases up to \$500, at least three bids must be submitted in writing; on purchases over \$500, bids must be obtained through public advertising.



ENGINEERED FOR MAXIMUM GRINDING PRODUCTION

ABRASIVE COMPANY GRINDING WHEELS are manufactured in grain and grade specifications especially adapted to give best results on your production grinding machines. Maximum grinding efficiency involves speed of cutting action, length of wheel life and quality of finish or work obtained. Our extensive manufacturing facilities and engineering resources are directed wholly towards the most efficient combination of these factors which will give you the best production from your grinding operations.

Abrasive Company offers a complete grinding wheel and abrasive service for all operations from coarse snagging in foundries and steel mills to the finest precision grinding in metal-working production, tool rooms and machine shops. For better service from the grinding wheels you use investigate ABRASIVE Wheels—engineered for your work! Our representatives will be glad to make complete data available to you.

Prompt service from local stocks through industrial distributors in all principal cities.



ABRASIVE COMPANY
Division of Simonds Saw and Steel Co.
Tacony and Fraley Sts., Philadelphia, Pa.
Chicago Branch: 127 South Green Street

When writing Abrasive Company please mention Purchasing

Memphis—A system of uniform purchasing for city agencies at Memphis, Tenn., is being prepared at the direction of Mayor Chandler and the City Commission. The study and recommendations are in charge of a committee consisting of City Comptroller Frank Tobey, City Attorney Will Gerber, and City Purchasing Agent Gordon Hollingsworth. The proposed plan will draw together the purchases of the John Gaston Hospital, the Board of Education, the Memphis Light, Gas and Water Division, the Memphis Park Commission, the Cossit Library, and other public agencies which make their purchases separately at the present time.

Preliminary studies indicate that the

plan will not only seek to institute a uniform and coordinated system of purchase, but will extend to the receiving, handling, and disposing of merchandise, materials and equipment. It is pointed out that the city has instituted an excellent system of cash audits, but that no corresponding system of checking supplies is in force. Periodical audits of stores and equipment are therefore regarded as an essential part of the purchasing plan.

Springfield, Mass.—Centralized purchasing for the City of Springfield, Mass., became a fact last month after a long period during which the legislation and regulations governing the new post

were being revised. The Springfield *News* points out the paradoxical situation that by the time the new City Purchasing Agent was selected and entered upon the duties of his office, practically all the buying for the year had been completed, so that little practical effect can be expected from the improved organization and policy until 1941 is well under way.

The report states that the entire list of 21 items for the Department of Streets and Engineering was contracted for in April, with present contracts remaining in force until April, 1941. Bids for coal on all city buildings were also called for, and contracts placed prior to the effective date of centralized buying. Purchases for the School Department, Police Department, Fire Department, and Park Department are said to have been virtually completed for 1940, excepting for the possibility that some unexpended balance of current appropriations may be found available for additional purchasing toward the year-end.

New Haven—Mayor J. W. Murphy of New Haven, Conn., in a special message to the Board of Aldermen, urged action by that Board to establish a Central Purchasing Bureau for the city. A permissive special act of the State Legislature has already granted the required authority for such a step.

The Mayor's message included a suggested draft of the ordinance, subject to change if deemed necessary after conference with city officials and a public hearing. The draft contained the following provisions:

The City Purchasing Agent to be appointed by the Mayor, and to serve until his successor is appointed, or until he resigns or is removed from office. Removal to be only for cause "which shall not be political." Salary of the Purchasing Agent to be fixed by the Board of Finance.

The Purchasing Agent, together with the Controller, Director of Public Works, and City Engineer, to constitute a Board of Standardization to classify and standardize, and to prepare and adopt written specifications for all supplies, materials and equipment used by the city.

The Purchasing Agent to have sole authority to buy all city supplies, materials, equipment and contractual services for all departments (excepting light, water or telephone service), and to sell all supplies, etc., not needed by the city.

Bids to be secured, before any purchase or sale is made, in the manner required by charter. Balances in departmental appropriations to be verified before any purchase is made. Contracts in excess of \$500 to be made by written contract after bids have been called by public advertisement, on at least 10 days' notice.

No contracts to be awarded to any person, firm, etc., who is in arrears in taxes or assessments levied by the city.

The Purchasing Agent to be empowered to employ such clerical assistance as may be necessary to the proper operation of the department, subject to the approval of the Board of Finance.



MORE PRODUCTION WITH G.T.D. HIGH SPEED TAPS

This company got it when they adopted G.T.D. Greenfield High Speed Ground Thread 7/16-24 Taps for tapping these heavy duty cast brass elbows. Average production was stepped up from 1050 to 1220 per hour, a 16% increase. And production per tap went from 9,000 to 12,000, up 33-1/3%. These increases represented clear savings because they used the same machine, and even the same cutting lubricant.

G.T.D. Greenfield standard and special threading tools are backed by the accumulated experience of over 75 years, all of which is at your disposal. Get in touch with your local distributor or with a G.T.D. Engineer.

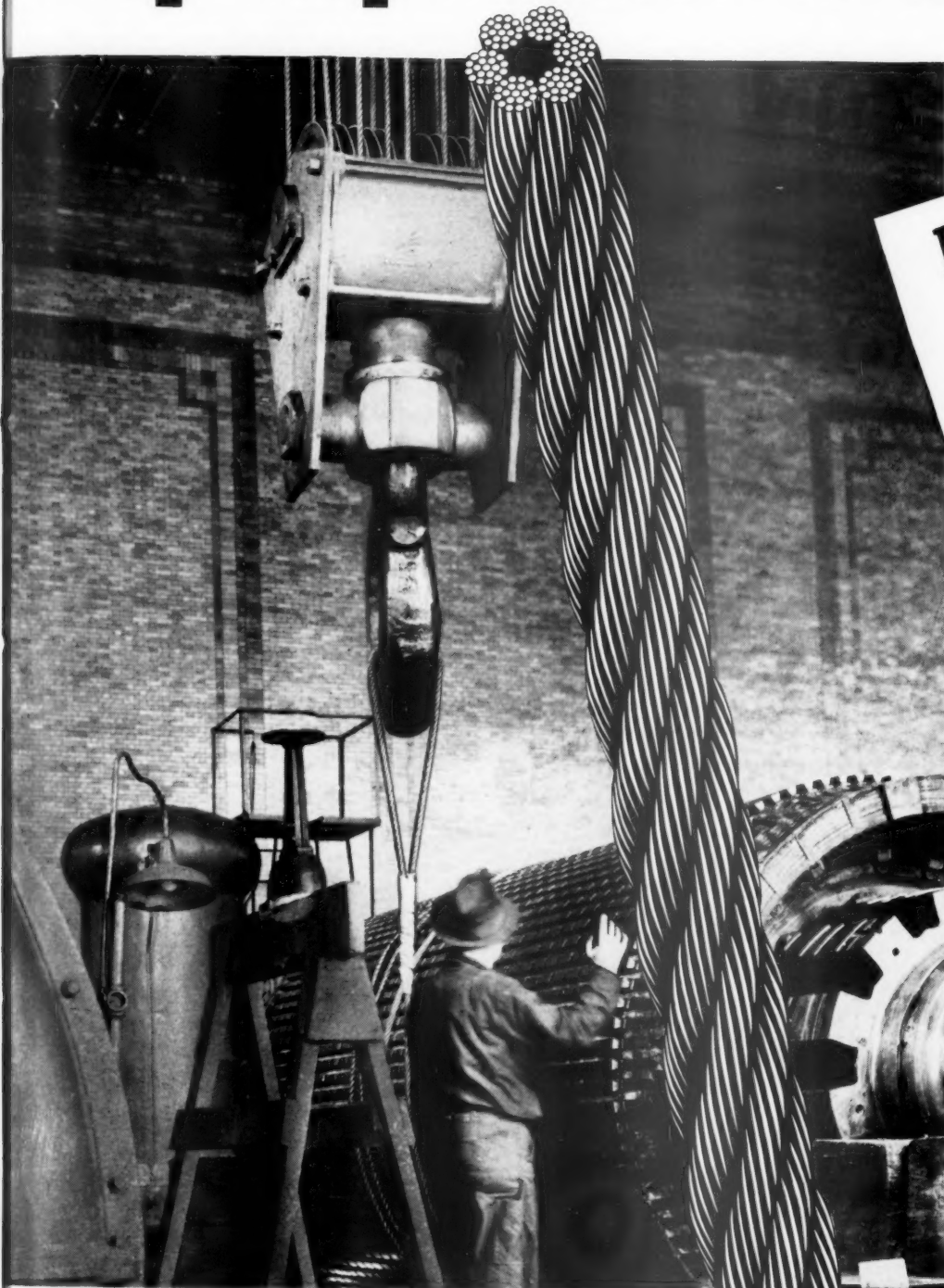
Greenfield Tap & Die Corporation • Greenfield, Massachusetts
Detroit Plant: 2102 West Fort St.

Warehouses in New York, Chicago, Los Angeles and San Francisco
In Canada: Greenfield Tap & Die Corp. of Canada, Ltd., Galt, Ont.

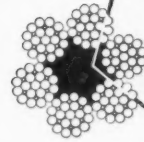


When writing Greenfield Tap & Die Corporation please mention Purchasing

Strip Rope Costs to the Bone...



ROEBLING



**"BLUE
CENTER"**

WIRE ROPE

STANDARD OR PREFORMED

Profit in Industry depends on ability to pare down operating cost—lower and lower. That is why an ever increasing number of Industrial Plants are taking advantage of the cost-cutting ability of Roebling "Blue Center" Wire Rope.

First of all, "Blue Center" is the finest of all Roebling Wire Ropes. It represents the highest achievement of all Roebling's research and manufacturing efforts. It has been developed with the one idea of producing a super-quality rope—one which will assure the maximum of durability, safety and economy in rope service. Made of famous Roebling acid, open-hearth steel—it provides the highest degree of resistance against abrasion, fatigue and sudden shock.

You can easily prove the cost-cutting and safety advantages of Roebling "Blue Center" Wire Rope. Install "Blue Center" when you re-rope. Keep accurate service records. Compare. Then you be the judge.

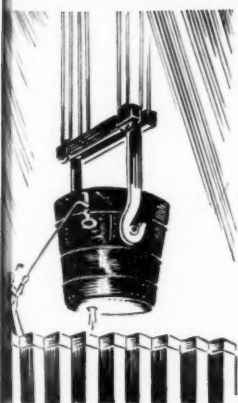


JOHN A. ROEBLING'S SONS CO.
Trenton, N. J. Branches in Principal Cities

CLOSE CONTROL OF WIRE ROPE QUALITY

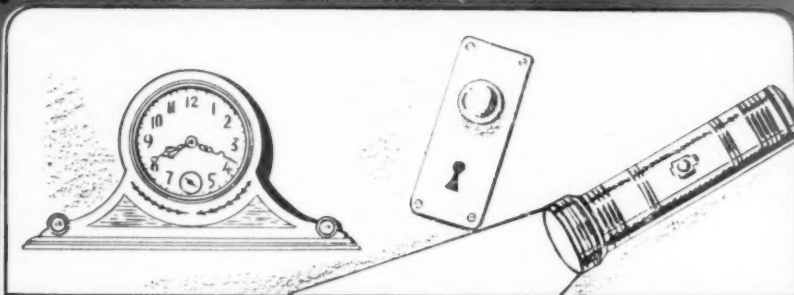
When it comes to making wire rope of exceptionally great strength and stamina, like Roebling "Blue Center", ordinary production methods won't do. Painstaking care and skill of the highest order must be exercised.

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REGULATING SALES BELOW COST

The National Food and Grocery Advisory Committee, an industry-wide advisory board, has drawn up a model statute designed to outlaw below-cost sales in the retail field by imposing a mandatory minimum mark-up of 6% at retail over cost or replacement, whichever is lower. Suitable exemptions are provided. A campaign is now in process to secure the passage of such an unfair trade practice act in all states.

Similar laws have been enacted in twenty-six states, but in five of these states—Maryland, Nebraska, New Jersey, Pennsylvania and Minnesota—such laws have been invalidated. In Minnesota, however, the act was revised and re-enacted, the new version having been sustained by the Minnesota Supreme Court.

Opposition to legislation of this nature, aside from objections in principle, has largely been grounded on the expectation that trade pressure for excessive mark-ups would lead to abuses and entrench unwarranted margins of distribution cost. The very moderate mark-up proposed in the present model bill is free from that objection. It seeks to establish the principle that sales below cost constitute unfair price competition and are fundamentally offensive to the competitive system, and that their elimination from the retail trade practice would make for stability without imposing hardship upon the consumer.

Interest in unfair trade acts to curb predatory price cutting has increased as the other alternative—voluntary price maintenance agreements or contracts between producer and distributor—has failed to accomplish the desired objective. Laws which sanctioned resale price maintenance have been enacted in all states except Delaware, Missouri, Texas and Vermont, and the District of Columbia. They have been upheld by the courts, but have failed to solve the basic problem because many producers, particularly in the food field, have not entered into price maintenance contracts in the distribution of their products.

FUEL OIL CONSUMPTION

The statistical department of the American Petroleum Institute forecasts an increase of from 12 to 17% in domestic use of gas, oil and distillate fuels during the coming winter, while exports will continue to show a considerable decline, so that total demand and consumption of these oils may be from 6 to 9% greater than a year ago. Supporting the estimate are reports that installations of burners for domestic fuel oil are running 13% ahead of last year, indicating that 2,150,000 oil-burning domestic heaters will be in operation this winter. Some progress has been made toward building up adequate inventories on the Atlantic seaboard, and on the Louisiana and Texas gulf regions; to a lesser extent this is true of the Indiana-Illinois and Oklahoma-Kansas regions. Last year 38 million barrels of these products were in storage at refineries and terminals on September 30th.

New Corporations for Defense

THE Reconstruction Finance Corporation last month announced the creation of two additional corporations to assist in carrying on the national defense program, working in close collaboration with the War and Navy Departments.

The Defense Supplies Corporation is organized to acquire and store high test aviation gasoline for the Army and Navy air services. A sum of 50 million dollars has been allotted by the R. F. C. for this purpose, and substantial quantities of the gasoline will be stored at strategic points throughout the nation.

The program is expected to follow the recommendations of a special committee of oil company engineers appointed by the National Defense Advisory Commission to advise on storage systems. The committee, operating under the general supervision of Robert E. Wilson, chairman of the Commission's petroleum section, includes Scott E. Drummond of the Standard Oil Co. (N. J.), W. B. Engelbrecht of the Phillips Petroleum Co. (Cal.), S. P. Johnson of the Standard Oil Co. (Cal.), O. B. Lewis of the Ethyl Gasoline Corp., C. D. Norris of the Texas Co., Walter Samans of the Sun Oil Co., and E. D. Seymour of the Socony-Vacuum Oil Co. Underground storage tanks have been agreed upon as safer from attack and not much more expensive than surface storage.

The industry's capacity to produce 100 octane gasoline is considerably in excess of peacetime requirements, but far short of wartime requirements. The new corporation will acquire a 100-day wartime reserve supply, to be maintained on a revolving basis, to be replenished as the Army and Navy purchase the fuel so that a full reserve will be available at all times. Storage facilities are to be financed by the Army and the Navy, which will also pay a surcharge on the gasoline thus acquired, so that the D. S. C. will be a self-liquidating project.

The other new organization is the Defense Plant Corporation. No very specific statement has been issued regarding the particular functions of this agency, but it is concerned with a number of phases of plants, equipment and machinery essential to armament industries, particularly for the manufacture of airplanes, airplane engines and airplane parts. Chairman Jesse Jones of the Federal Loan Agency cited some of its functions as assisting small subcontractors through the purchase of needed equipment, and cleaning up various other odds and ends in the defense procurement program which are outside the scope of other existing agencies.

Each of the new corporations is capitalized at five million dollars, the stock being held by the R. F. C.

Previously announced, and organized on a similar basis, are the Rubber Reserve Company for the acquisition of rubber stocks, and the Metals Reserve Company for the acquisition of strategic materials such as tin, manganese and chrome.

Meanwhile Interior Secretary Ickes announced that the government's own helium plant near Amarillo, Texas, is prepared to meet any demands which the national defense program may impose upon it. According to his statement, the plant, which is the only one of its kind in the world, can increase its production by 50% if necessary.

NAVY BUYING DECENTRALIZED

The recent purchase of 62,000 pairs of shoes through the Navy Purchasing Office in New York is interpreted by

some observers as a start toward a policy of decentralization in Navy procurement. The transaction is the first contract of its kind in many years to be awarded from a point outside of Washington.

The explanation is advanced that Navy buying offices have been under steadily increasing pressure ever since the national defense program got under way on a large scale, and the situation at Washington headquarters is reported to be acute. The Bureau of Supplies and Accounts is now opening bids almost

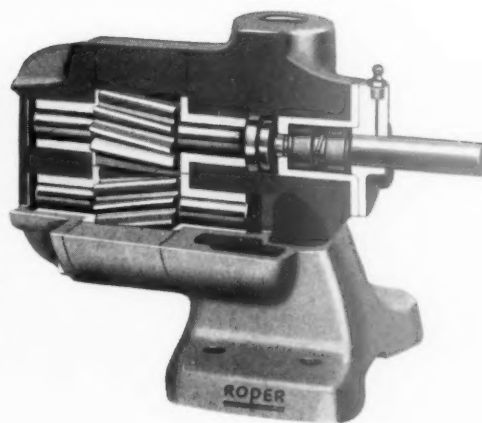


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- **3 PIPING ARRANGEMENTS**—to employ the connection best adapted to the installation.
- **SPIRAL GEARS**—quiet at all speeds with high volumetric and mechanical efficiency.
- **MECHANICAL SEAL**—reduces power load and keeps leakage to a minimum.

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every day, and as many as 400 separate proposals have been received in a single day. The department would be able to ease the burden somewhat, and to give urgently needed attention to the more specialized purchases now coming up for consideration, if some of the routine purchases were diverted to purchasing officers at other points. A substantial volume of purchases, such as the one cited above, would come under the classification of routine business, and an extension of this policy is not improbable.

STRANGE SURPLUS

City purchasing officials charged with the disposal of surplus materials have probably as strangely assorted and difficult a line to sell as was ever handed to

a salesman. Among the items advertised in recent months were a complete street railway system, fire alarm boxes, houses on condemned property, superannuated horses and mules, and voting booths. Marketing surveys would reveal a very limited potential outlet, if any, for such offerings. The auction method of disposal has been used with some success when other means have failed to move property no longer needed.

Occasionally discarded equipment "comes in handy" at a later date, in some unforeseen way. Two years ago the City of Troy, N. Y., retired Truck No. 1 of the Fire Department, when several new pieces of apparatus were purchased. Last month Pumper No. 12 was involved in a traffic accident and came out of it in a badly damaged condition. Repair esti-

mates ran pretty high until City Purchasing Agent Samuel R. Cooper thought himself of old Truck No. 1, languishing in dead storage at the public works garage. It was found possible to utilize the radiator, fenders, headlights, axle, and other parts in reconditioning the damaged pumper, with a direct saving of about \$500 in the repair bill, resulting in a very creditable salvage record, besides getting the pumper back into service within two weeks.

Toughest salvage assignment is reported from Little Rock, Ark., where City Purchasing Agent T. W. Clapham was instructed to dispose of three and a half cases of dynamite which had been stored for more than two years in a stone explosives house at the city quarry. The dynamite had grown more potent with age, for during its long period of storage the nitro-glycerine in the sticks had separated from the sawdust, making it extremely dangerous to handle and constituting a serious hazard to public safety. In the absence of any normal commercial market for the jittery sticks, Mr. Clapham appealed to the police department, which declined his invitation to remove the cases from the storage house. The dynamite was then offered to any taker, still without success. Mr. Clapham finally found a taker in the person of a dynamite salesman who agreed to remove the dangerous explosive. Even though there was no monetary return on this transaction, there was a high degree of satisfaction in removing the safety hazard.

McKEESPORT ADOPTS CENTRAL PURCHASING PLAN

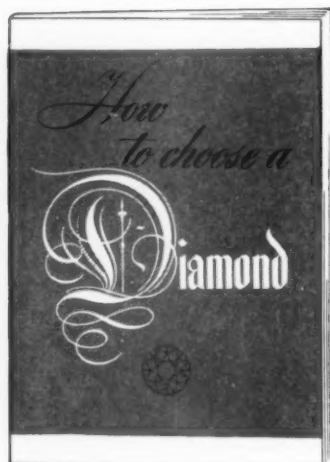
The City Council of McKeesport, Penna., has adopted a plan centralizing purchases for the city, effective this month. City Clerk Kenneth J. March is named as the purchasing officer for all departments operating under the city's general fund, and Miss Katharine Burk of the water department staff will serve in a similar capacity for the water department, which has an independent fund. No purchases will be made without authorized purchase orders, issued only when the requisition is approved by the appropriate department head. The system will eliminate unauthorized buying of supplies and is also expected to result in savings through bulk purchasing.

TRAVELING EXHIBIT

Institutional Purchasing Agents have been particularly invited to witness the traveling exhibit of Congoleum-Nairn, which this month starts its second fall season with a showing at Jamaica, Long Island, and will proceed to various eastern metropolitan centers demonstrating installations of linoleum for flooring, wall treatments, table and sink tops, and in varied specific conditions of new and remodeled structures. The exhibit is supplemented by motion picture records of installations, instruction in specifying and lectures and actual demonstrations in handling the material. Architects, contractors, builders and mechanics are also invited.

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Minimum Coal Prices Again Deferred

THE effective date for minimum price schedules and marketing rules on bituminous coal, as determined by the Bituminous Coal Commission, announced last month as September 3rd, has again been postponed. October 1 has now been named as the effective date, according to an announcement by Director Howard A. Gray, upon authority of an order from Interior Secretary Harold L. Ickes. The extension was granted to permit filing of requests for review of the price determinations in the light of modifications made by the Director with respect to the recommendations of the various division trial examiners.

A statement issued in connection with the new announcement further clarifies the policy and objectives of the Commission in respect to the industry.

"The administrative agency was not instructed, and it has not attempted, to remake the industry anew," says the Director, "or to set prices upon its conception of industry efficiency or the advantages of a planned economy."

Pointing out that although Congress was interested in preserving for coal producers their existing "fair" competitive opportunities to sell their coal, the findings state that the Coal Act necessarily eliminates the "competitive opportunity" of producers to attempt to make inroads on markets by price cutting which lowers the industry's income below its average cost. The Act also eliminates the "competitive opportunity" to make sales by dumping, the sale of distress coal, manipulations resulting in discriminations between individual consumers in the same market, and "all the other chaotic forces which were present in bituminous coal markets under free and open competition."

Under the proposed plan, three factors primarily determine the ability of coal producers to secure and maintain "existing fair competitive opportunities." These factors are: (1) differences in transportation methods and charges, (2) comparative cost of production, and (3) relative quality of coals.

Coals of similar quality, coming from districts of comparable production costs, are extremely competitive in nature. They tend to share the market to which their transportation costs are equal, and dominate the markets where they have advantageous freight rates. But a particularly advantageous freight rate may permit a low quality coal from a high-cost district to offset the competitive advantages of higher quality coals, economically produced, but operating on a high freight rate.

Where coals are of similar quality and have comparable freight rates, low-cost districts enjoy a competitive advantage reflected in wider distribution than that of higher-cost coals, which compete most strongly where they have favorable transportation costs. Furthermore, high quality coals have a much more extensive distribution than lower

quality coals, upon the merit of the respective products, and are competitively sold notwithstanding an increased burden of freight charges.

An extensive investigation of how coals were distributed in 1937 has been taken by the Commission to show a normal pattern of the nation's coal markets, and has been used in establishing minimum price schedules to preserve existing fair competitive opportunities. From this survey, distinctions have been drawn

between coals which have a substantial competitive position in a market and those which have merely moved into a market sporadically as a result of occasional or peculiar circumstances.

Outstanding point of controversy between producers and the Commission in the establishment of minimum prices has been the problem of determining relative market values of competitive coals so that the minimum schedules would preserve the fair competitive opportu-

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These Macwhyte slings are well worth looking into, well worth suggesting to your superintendent and engineers. You and they will be intensely interested in the new Macwhyte Sling Handbook. Just ask for Handbook S-6 on your company letterhead.

MACWHYTE COMPANY, 2918 Fourteenth Avenue, Kenosha, Wisconsin, *Manufacturers of wire rope and braided wire rope slings.* Offices and warehouses in New York, Pittsburgh, Chicago, Ft. Worth, Portland, Seattle, San Francisco. Distributors throughout the U.S.A.

Have you ever considered the many **POSITIVE SAFETY** features of the patented braided slings made by Macwhyte? The only slings made from endless **LEFT-&-RIGHT LAY** wire ropes?

Hundreds of manufacturers have, and are now regular Macwhyte sling users. For they have found their riggers and crane men have complete confidence in the safety of Macwhyte slings . . . confidence that results in fast, profitable handling of loads.

Left-&-Right Lay endless wire ropes braided in continuous uniform spirals are the last word in sling construction, *strong, LIGHT and SAFE.* They're so flexible, too—so easy to put around the load that many a user has said they "handle like a silken rope."

MACWHYTE
ATLAS
Braided Slings

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ities heretofore existing. The objective of the new schedule of prices at the mines is to secure a cost, delivered at destination, which will reflect relative market values. The Coal Act requires that transportation charges and methods must be taken into account in determining these prices.

1 1 1

USE OF LUMBER IS INCREASING

According to a recent estimate of the Lumber Survey Committee, U. S. Department of Commerce, lumber consumption in 1940 will amount to approximately 28 billion feet, an increase of 6% over the 1939 total.

The forecast is based on the statistics of the first half year, showing con-

sumption of 13,339 million feet, 5% ahead of the corresponding figure of last year, and an estimate of 7,500 million feet for the third quarter, continuing at about the same rate over the balance of the year. The report states that lumber stocks are moderate, standing in about the same relation to consumption as in the period 1927-1929.

According to the committee, facilities of the lumber manufacturing industries are adequate to supply the timber products requirements of the national defense program. Present sawmill capacity is sufficient to provide an increased output of 40% if necessary. Available timber resources are also adequate, and are protected by improved methods of logging. National defense uses of lumber and timber products, direct and indirect,

are expected to range between 4 and 5 billion feet over the next twelve months.

The second quarter record of building activity was higher than any quarter period since 1929, and the high levels reported in May, June and July indicated that home building has not been retarded by defense activities and wartime uncertainties. Housing, including ordinary urban and rural home and farm building, and emergency housing projects in essential war industry centers will continue to be the backbone of the lumber market. Private industrial consumption has been lagging behind the 1939 rate.

The personnel of the Lumber Survey Committee consists of Thomas S. Holden, vice president of the F. W. Dodge Corp., New York; M. W. Stark, economist, of Columbus, Ohio; Calvin Fentress, chairman of Baker, Fentress & Co., Chicago; and Wilson Compton, secretary and manager of the National Lumber Manufacturers Association, chairman. Phillips A. Hayward, chief of the Forest Products Division, Department of Commerce, is secretary of the committee.

1 1 1

DEFENSE PURCHASING POLICY PERMITS PARTIAL BIDS

The recently adopted policy of the National Advisory Defense Commission to accept split bids on governmental orders is calculated to expand potential sources of supply by making the government business more attractive to small concerns which have heretofore not been in a position to bid on contracts out of proportion to their productive capacity. Lack of legal resources with which to protect themselves in negotiating with the government has also been cited as an important reason for the reluctance of smaller manufacturers to compete for the governmental business. As a result of this situation, small concerns have frequently preferred to obtain subcontracts from the larger companies that had bid successfully on an entire order.

Under the new policy, a supplier may now submit bids on a part of the complete order, if he so prefers. As a result of this ruling, the smaller companies may participate directly in defense production, thereby distributing orders more widely through the country.

1 1 1

COAL OUTPUT AT PEAK

Production of bituminous coal during the third quarter of 1940 will exceed 112 million tons, according to the estimate of John D. Battle, executive secretary of the National Coal Association. Such a total would represent a record level for this period since 1929, and would bring the total for the first nine months of the year to 333 million tons.

The ordinary seasonal rise in output and consumption of coal is accentuated this year by the higher rate of operations in the coal-burning industries, particularly steel. In previous years, general industrial production has receded in the closing months of the year but that situation is currently reversed. Steel production is likely to be maintained at



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current rates for the balance of the year, and many business analysts are predicting that general industrial production will move up rather than down during the fall and winter months. While there is still a considerable element of uncertainty as to future needs, there is the certainty of increasing activity in the national defense program, which will mean, for some industries at least, a doubling of requirements. In view of this situation, there has been a considerable amount of prudent and precautionary advance buying and delivery in excess of immediate needs, in contrast to hand-to-mouth buying policies formerly observed.

A further element stimulating the purchase and stocking of coal during the third quarter is the proposed effective date of October 1st for minimum price schedules promulgated by the Federal Bituminous Coal Division, which would entail higher price levels for many grades of industrial fuels.

Lake shipments have been an important factor, loadings of bituminous coal at the lake ports having broken all recent records this year and promising to aggregate 47 million tons before winter closes navigation on the lakes.

Stocks of coal in the hands of industrial consumers and in retail yards are reported as somewhat heavier than a year ago, but are not out of line with the present accelerated rate of consumption, and there is a reasonable basis for anticipating a further moderate increase in such stocks.

The estimated output of more than 9½ million tons per week represents a dollar distribution of more than \$40,000,000 weekly in mine wages, rail freight, and other expenses of production and distribution.

NORTHWEST INDUSTRIES EXPAND

A report submitted to the National Defense Advisory Commission by Paul J. Raver, Bonneville Power Administrator, cites recent industrial development in the northwestern area due to the availability of low-cost Columbia River power, and points out further opportunities and need for industrial expansion there in the national interest. Three important industries established during the present year are the Vancouver plant of the Aluminum Company of America, which is expected to start production of pig aluminum this month, the calcium carbide plant of the Pacific Carbide and Alloys Co., which is also expected to get into production this year, and the Sierra Iron Co., which will produce pig iron from regional ores. There is a possibility that production of ferro-chrome, magnesium, chlorates and high grade and alloy steels may also be initiated in the near future. All these active industrial prospects fall in the fields of electro chemistry and electro metallurgy, which could logically develop in the northwest because of the importance to them of cheap power and the availability of minerals.

The report specifically concerned itself with industries important to the defense

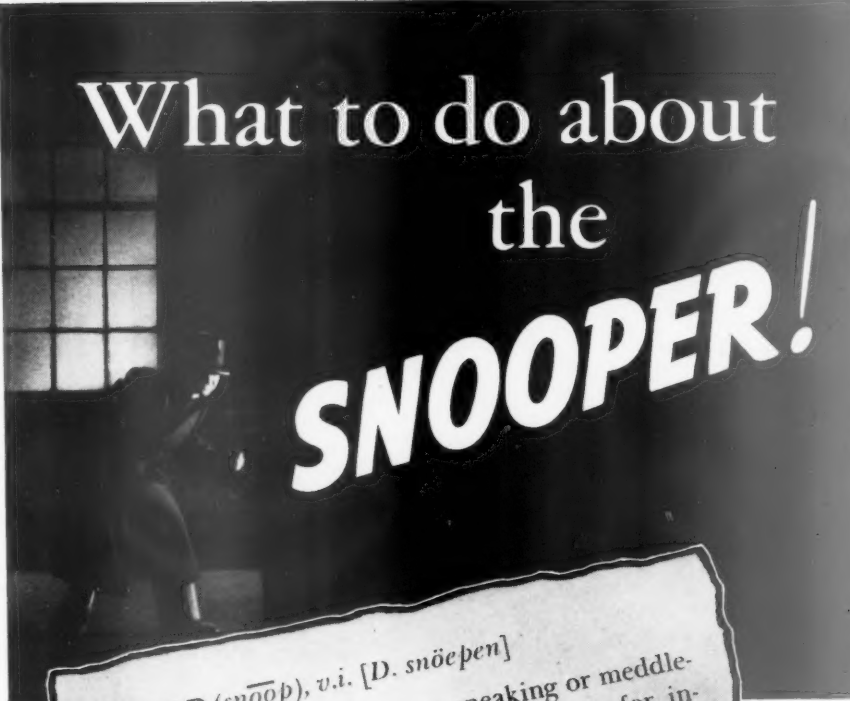

What to do about the SNOOPER!

SNOOP (*snoōp*), *v.i.* [*D. snöepen*]
To look or pry about in a sneaking or meddling manner; also to search pryingly for information, etc.—**SNOOPER** (*er*), *n.* one who snoops.
—Webster's Dictionary

NOW is the time to keep prying eyes away from your plant—to be sure that burglars, trespassers or others who have no business on the premises are kept out . . . to prevent the work of firebugs. It's too big a job for your watchman to do alone. But you can have a record of every man who enters your plant—and every piece of material that goes out when the watchman has the help of U-S-S Cyclone Fence.

Cyclone Fence provides easy entrance for people you want, at conveniently located gates. And it politely, but forcefully refuses admittance to people you don't want in your plant.

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program—aircraft, ordnance, munitions, and shipbuilding, and the basic industries whose products are essential to these operations. Outlining the situation, and calling attention to the desirability of extending the power network, the report stated:

"In appraising possible contributions of the northwest (in strengthening the nation's defense position) an important fact must be noted about the present location of the war industries of the nation. Most of them lie in the northeastern states east of the Mississippi, occupying 13% of the land area of the country. In contrast, eleven western states covering 40% of the land area are not equipped with industries to provide adequately for the defense of the Pacific Coast and Pacific possessions, nor with industries to supplement, when necessary, production of eastern plants for defense of Atlantic outposts.

"These western states lack munitions and ordnance plants. They have only some shipbuilding and aircraft manufacturing facilities; but even for these industries the west draws upon the east for many basic materials and parts that could be made closer to western plants.

"These circumstances do not contribute to speedy and most effective defense of the United States and its possessions. Products of western mines, vital to war industries in the east—copper, lead, zinc, mercury, tungsten, molybdenum, etc.—have to move east 2,000 miles for processing and fabrication.

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"Part of this obviously has to return in the form of materials and supplies for the defense outposts of the Pacific Coast, Alaska, and Hawaii. These movements take time and transportation costs, and they burden railroads and ships. Some of these movements could be eliminated. Thus copper and zinc could be made into brass for munitions close to the western mines. Pig aluminum could be converted into sheets and extruded parts in western mills to supply the large aircraft plants of the Pacific Coast.

"It is not widely known that power projects at Bonneville and Grand Coulee will provide in the next two years, by July 1942, over 600,000 kilowatts of capacity. In addition, total ultimate installations of both projects, that can be expedited according to the needs of the nation, amount to over 2,400,000 kilowatts capacity. Here is an enormous reservoir of low cost power awaiting the command of the nation to serve whatever uses may be dictated by the interests of national defense. The nation should, therefore, be concerned with an appraisal of how it may best make use of what the northwest can offer."

1 1 1

N.I.A.A. AT DETROIT

The 18th annual conference of the National Industrial Advertisers Association will be held at the Hotel Statler, Detroit, September 18-20, offering a study and discussion program on marketing problems of industry, including special phases which have gained importance since the acceleration of national defense plans.

A feature of the three-day program is a series of ten "clinic" sessions on specific marketing topics, each of which is in direct charge of a district chapter, where the local groups have been working for several weeks to gather and correlate material for the discussions. The clinic topics and discussion leaders are as follows:

Pittsburgh: The Industrial Advertising Council of Pittsburgh sponsors the clinic on "Co-ordination of Advertising with Selling." D. Clinton Grove of the Blaw-Knox Co., Blawnox, Pa., is chairman of the session.

Gettysburg and Philadelphia: The Mason-Dixon Industrial Advertisers and the Eastern Industrial Advertisers jointly sponsor a session on "Measuring Advertising Results." Walter H. Gebhart of Henry Disston & Sons, Inc., Philadelphia, is clinic leader, assisted by F. W. Pensinger of Landis Tool Co., Waynesboro, Pa.

St. Louis: The St. Louis Industrial Marketing Council will dramatize its assignment, "Prepare and Present an Advertising Program that Management will Approve," under the direction of C. B. Dietrich of Wagner Electric Co.

Western New England and Boston: The Industrial Advertising and Marketing Council of Western New England and the Technical Advertising Association of Boston will lead a discussion of the topic, "How Can the Advertising Department Contribute to the Solution of General Company Problems?"

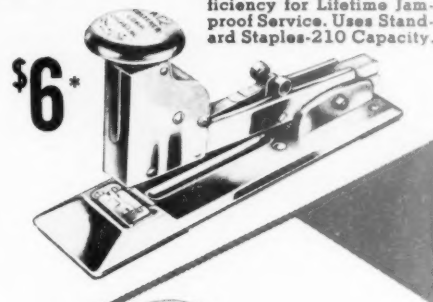
ACE STAPLING MACHINES

Preferred in
UP-TO-DATE
OFFICES
SCHOOLS
FACTORIES

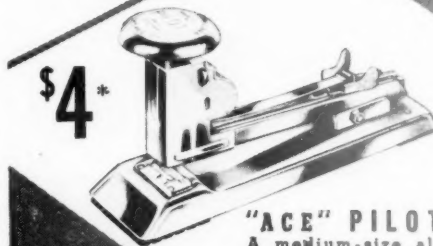
Lifetime Guarantee
OF FAITHFUL TROUBLE-FREE
STAPLING SATISFACTION

"ACE" STANDARD

Our popular leader, representing the highest achievement in stapling efficiency for Lifetime Jam-proof Service. Uses Standard Staples-210 Capacity.



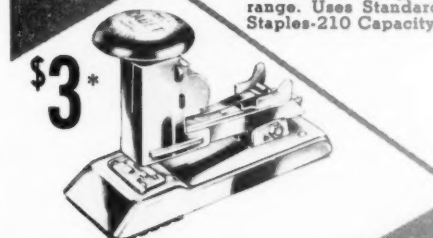
\$6*



\$4*

"ACE" PILOT

A medium-size all steel, precision built machine. Performance unmatched in its price range. Uses Standard Staples-210 Capacity.



\$3*

"ACE" CADET

A sturdy small machine, same construction, as the Pilot with shorter magazine. Uses Standard Staples 105 Capacity.



"ACE" CLIPPER PLIERS

\$4.50*

Lightweight, easy action, yet built for lifetime performance. Uses Undulated Staples-210 Capacity.

ACE STAPLE REMOVER

Saves your finger-nails... prevents torn papers. Every stapling machine operator should have one. *East of Rockies

60c*



ORDER FROM YOUR STATIONER

ACE FASTENER CORPORATION

Makers of the World's Best Stapling Machines

3415 N. Ashland Ave.

Chicago, Ill.



1940

1896

44 YEARS of RESEARCH

and no less pioneers today. Wherever Panama and Beaver scientific genius leads, our customers follow with rewarded confidence.

Manufactured by
**MANIFOLD
SUPPLIES
COMPANY**
Nationwide
Distribution

Identified
Ink and Fabric
Products of
Superlative
Utility and
Quality

PANAMA & BEAVER

THE BEARINGS ARE
Already
MOBILIZED



EVERY SIZE
REQUIRED IN
PRODUCTION OR
MAINTENANCE
OF INDUSTRIAL
MACHINERY



COMPLETELY MACHINED AND FINISHED
READY FOR INSTANT ASSEMBLY

BUNTING
Cast Bronze Bearings
Standardized Bearings
• Babbitt Metals
• Bronze Bars
• Bronze Bearings
• Bronze Bushings

● Any quantity desired is instantly available from stock. Write for catalog... The Bunting Brass & Bronze Company, Toledo, Ohio. Warehouses in All Principal Cities.

BUNTING
BRONZE BUSHINGS • BEARINGS
PRECISION BRONZE BARS • BABBITT METALS

● Bearings for electric motors of all makes from 1/50 hp to 100 hp also available from stock. Tubular and Solid Bearing Bronze Bars.

Chicago: The Engineering Advertising Association sponsors the clinic on "How to Increase Direct Mail Effectiveness." Stuart G. Phillips of Dole Valve Co. is the discussion leader.

Indiana: The Indiana Association of Advertisers, under the leadership of Spencer W. Curtiss of Spencer W. Curtiss, Inc., Indianapolis, has as its topic, "Get Out Into the Field."

Milwaukee: The Milwaukee Association of Industrial Advertisers will lead the discussion on "Allocation of Budgets; How to Organize Your Work." Robert Hamilton of The Dumore Co., Racine, is chairman.

New York—New Jersey: The Technical Publicity Association and the Industrial Marketers of New Jersey jointly sponsor the clinic on "Measuring the Readership of Business Papers," with R. O. Eastman of New York as discussion leader.

Cleveland and Youngstown: These two Ohio chapters of N.I.A.A. will lead a session on "Creation of Effective Copy; Layout and Illustration; How to Test the Relative Effectiveness of Your Work." Co-chairmen of this meeting are Albert Wearstler of Wearstler Advertising, Inc., Youngstown, Kenneth W. Akers of Griswold Eshleman Co., Cleveland, and H. E. Van Petten of B. F. Goodrich Rubber Co., Mechanical Goods Division, Akron.

Cincinnati: The Cincinnati Industrial Advertisers Association will direct the clinic on "Market Information—How to Get It and Use It." The clinic leader

FIGHT!
CORROSION with
HARPER'S

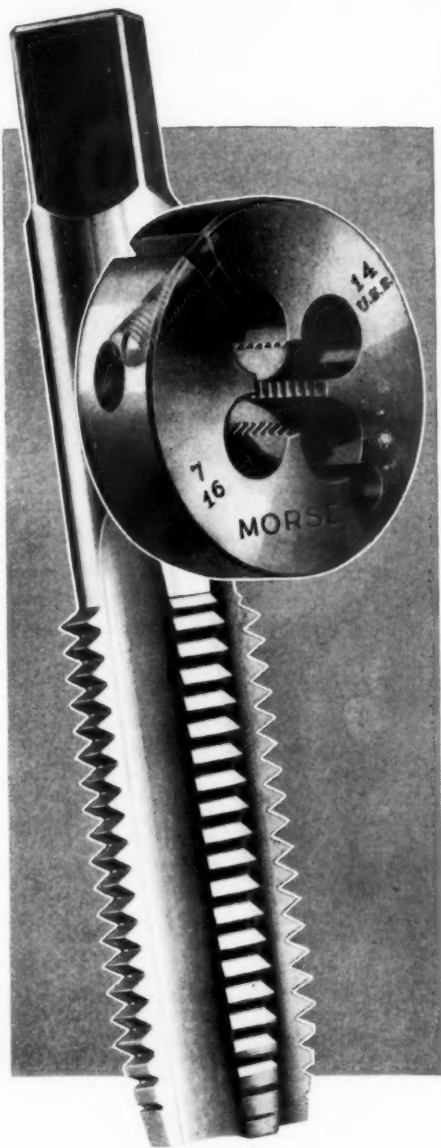
BOLTS. NUTS and SCREWS

Harper is your logical source of supply for every type of non-rust fastening made. Brass, Bronze, Everdur, Monel and Stainless... bolts, nuts, screws, washers and other fastenings—Harper makes them all to defeat those forces which destroy common fastenings. **3600 ITEMS IN STOCK** Immediate shipment... Almost every corrosion-resistant alloy.

SPECIALS WELCOME
Harper's plant is set up to turn out a great variety of unusual work economically. Ask for Catalog 72 which shows the full Harper line and contains important reference data. Write The H. M. Harper Company, 2606 Fletcher St., Chicago.

HARPER
Chicago





THREADS ARE WORKERS

... As soon as they are cut, they are ready for their job of holding... No threads work better or last longer than the clean, accurate threads cut with Morse Taps and Dies.

MORSE

THERE IS A
DIFFERENCE

**TWIST DRILL AND
MACHINE COMPANY**
NEW BEDFORD, MASS., U. S. A.

NEW YORK STORE: 130 LAFAYETTE STREET
CHICAGO STORE: 570 WEST RANDOLPH STREET

is Theodore Brown of Perry-Brown, Cincinnati.

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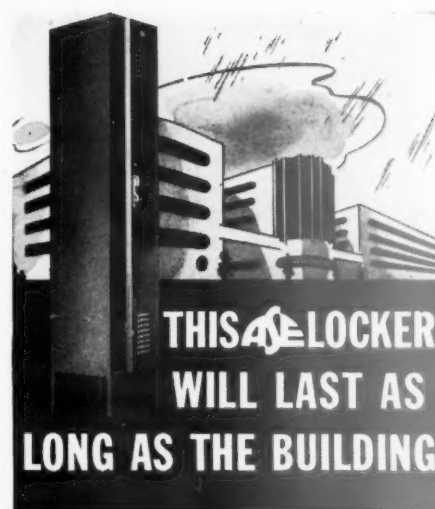
SAFETY CONGRESS AT CHICAGO

The 1940 National Safety Congress, held under the auspices of the National Safety Council, Inc., will be held at the Stevens Hotel, Chicago, October 7th through 11th. An exceptionally complete and comprehensive program of addresses and discussions has been planned. For the convenience of members and delegates, and to permit specific and detailed consideration of problems affecting particular industries, the program is arranged largely in the form of group sessions corresponding to the organization plan of the Council, and embracing the following sections: Aeronautical, American Society of Safety Engineers—Engineering, Automotive and Machine Shop, Cement and Quarry, Chemical, Child Education, Commercial Vehicle, Construction, Employees' Publication, Food, Marine, Meat Packing, Tanning and Leather Industries, Metals, Mining, Paper and Pulp, Petroleum, Power Press, Public Utilities, Refrigeration, Rubber, Steam Railroad, Street and Highway Traffic, Textile, Transit, and Wood Products.

There will be special sessions on Agricultural Safety, Building Maintenance (sponsored jointly with the National Association of Building Owners and Managers), Eye Protection (sponsored jointly with the national Society for the Prevention of Blindness), Fire Control and Prevention, Fundamental Causes of Accidents, Governmental Safety Service in Industry, Health Service in Industry, Home Safety, Industrial Nursing, Maintaining Interest in Safety, Occupational Diseases, Off-the-Job Accidents, Plant Transportation, Safety Belts, Safety Supervisors and Safety Training, and Visual Education. Also a series of lectures on "Psychology and Safety," and a showing of nine new sound films covering various phases of safety work.

Ralph O. Keefer, Purchasing Agent of the Aluminum Company of America, Pittsburgh, is General Chairman of the Chemical Section and will preside at the meetings of that group.

An exposition of materials and equipment relating to industrial and public safety will be open daily throughout the Congress, showing recent developments in ladders and scaffolding, non-slip floor and stair treads, fire protection equipment, personal protection equipment, vehicle testing equipment, lighting equipment, first aid and surgical supplies, insurance service, mechanical handling equipment, ambulances, speed governors, visual testing equipment, wash-room and locker equipment, stretchers, intoxication tests, safety films, awards and trophies, non-sparking tools, signs and signals, traffic control devices, dust control equipment, parking meters, police motorcycles, mechanical guards, cleaning systems, respiratory protection, sanitation products, vehicle service recording speedometers, mechanical tabulation equipment, railroad car brakes, and traffic barriers.



● Durability is the true test of any locker. A-S-E Lockers have successfully met that test in hundreds of industrial plants throughout the country. Built to last as long as the buildings, A-S-E eliminates the maintenance cost frequently encountered with less sturdily built equipment.



A-S-E Combination Lockers

A Type for Every Need

The complete line of A-S-E Lockers includes types, sizes, and arrangements which provide the practical and economical answer to every locker problem. They are made of high quality materials by an organization with over a quarter of a century's experience.

The A-S-E Locker Catalog contains in-



A-S-E Double Tier Lockers

formation about the vital points which determine the durability and satisfactory operations of any locker. You should have a copy in your files—mail the coupon today. There is no obligation.

ALL-STEEL-EQUIP COMPANY, Inc.
94 GRIFFITH AVE.
AURORA, ILLINOIS

MAIL THE COUPON FOR
THIS FREE CATALOG



ALL-STEEL-EQUIP COMPANY
Incorporated

99 Griffith Ave., Aurora, Ill.
Please send me a copy of the catalog "A-S-E Lockers for Tomorrow's Buildings."

Name.....

Address.....

City.....State.....

When writing advertisers please mention Purchasing



Competitive bids frequently change when the costs of receiving-handling, unpacking and distributing to stock or production departments are added. Some manufacturers' shipments can be handled easily, unpacked quickly, and conveniently stored or distributed. Other concerns cause delay and increase receiving room expense. Their products are received loose, making distribution more costly, or are in containers difficult to open and unpack.

ACME STEELSTRAPPED MEANS LOWER-COST RECEIVING!

Shipments that have been Acme Steelstrapped for reinforcement and protection usually show minimum receiving costs. One snip of each strap and the contents can usually be removed easily and quickly. The economical bundling of bulky, odd-shaped products makes handling easier, quicker. Freight cars braced by the Acme Unit-Load method can be unloaded faster.

When you insist on Acme Steelstrapped shipments you are virtually assured of minimum receiving room costs. Both you and the supplier will benefit.



Boxes, bundles and odd shapes cost less to receive when they are Acme Steelstrapped by the shipper.

BE SURE TO GET THE FACTS ABOUT ACME'S STRAP PURCHASE PLAN

Your own purchases of Steelstrap can be made most economically on Acme's strap buying plan. Mail the coupon for complete details. No obligation.

ACME STEEL COMPANY

2842 ARCHER AVENUE, CHICAGO, ILL.
Branches and Sales Offices in Principal Cities

ACME STEEL COMPANY
2842 Archer Ave., Chicago, Ill.

- ☐ Furnish complete information about the Acme Strap Purchase Plan.
☐ Mail a copy of "Stopping Profit Leaks" describing the advantages of Acme Steelstrap.

Name

Address

City State

NEW INDUSTRIAL MOVIE

A new sound motion picture produced by the Du Pont Company tells the story of neoprene, a synthetic rubber-like material that is being used to replace natural rubber in a great many products essential to our national well being. This timely twenty-minute film shows how neoprene is made, explains its chemical formula by means of animated cartoons, shows interesting tests of the material, and pictures hundreds of applications of products made from it.

The material itself, made from coal, limestone, salt and water, can be used wherever rubber is used, but has the additional advantage of being resistant to cracking from sunlight, ozone and aging. It will not swell or deteriorate rapidly from contact with most vegetable or mineral oils and chemicals, nor will it soften or harden appreciably when exposed to high temperatures.

Products made from this material are being used in the home, in service industries and in all producing industries. These products include gloves for doctors, the housewife, the chemist and the industrial worker; hose of all types; shoe soles and heels, and boots; transmission and conveyor belting; sink and stove mats; sink strainers; protective clothing and aprons; gaskets, seals and packing; dish scrapers; sheeting; printers rollers; pistons and valves; tubing; printing plates and blankets; packers, ram packing, cups and other oil industry products; industrial rolls; diaphragms; molded goods; wire and cable coverings; bulbs, catheters and stomach tubes; tank linings; and thousands of other resilient products of all types.

The motion picture telling this story is available without charge to any organization having available a 16 mm. sound projector. Bookings may be arranged through Rubber Chemicals Division, E. I. du Pont de Nemours & Company, Wilmington, Delaware.

JUTE PUBLICATIONS

The restriction on use of paper currently in force in England is reflected in the fact that only a limited number of copies are available of the 1940 Jute Year Book, published by the British-Continental Trade Press, London. This year's compilation is particularly important in its detailed listing and interpretation of the various regulations now governing jute and jute goods export. A chapter is devoted to research and new uses of jute goods, and there is a comprehensive discussion of the question of proofing. Up-to-date statistics are provided on production and shipments of cloth and bags for both Dundee and Calcutta. There is also a 70-page directory of raw jute producers, spinners and manufacturers, sack manufacturers, merchants, agents, shippers, and of trades related to the primary industry.

The Department of Commerce has also completed a survey of the jute industry, showing 222 pressing and baling plants and 67,730 jute mill looms in India, analyzed according to native or European ownership and management.

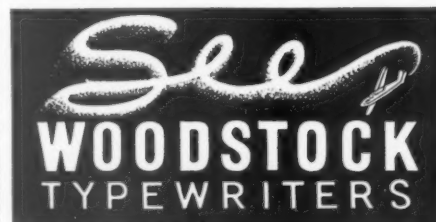
+ +
M.P. A.-

Are your spring specifications three-dimensional; giving width, breadth and height? The **FOURTH-DIMENSION** in spring specifications is explained in the new **LEE-BUILT SCIENTECH SPRING SPECIFICATION FORM**.

Write for it. It will tell you how to buy long-life, trouble-free spring performance.

LEE SPRING CO., Inc.

30 MAIN STREET
BROOKLYN, NEW YORK



Keeping a Varied Inventory Sensitive

(Continued from page 58)

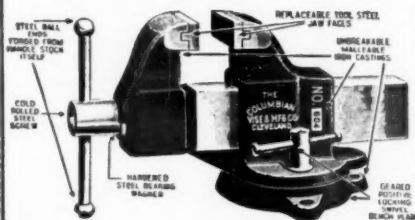
With prices and sales volumes changing as rapidly as they do now, the heads of sales departments are likely to be in touch with Purchasing several times per day. Consultations with estimating departments are matter of course. One of the effects of such exchanges of "feed box dope" is to keep the inventory sensitive by giving advance glimpses of the things the committee will have to decide. Another is to speed up the turn over of stocks of finished parts and assemblies while maintaining safe inventory reserves. Quick turnover is, of course, one of the advantages of sensitive inventory.

The Purchasing Department also is a member of a committee which works on product development. The reason for this goes beyond the mere planning of the purchases of the future.

In product development, the Purchasing Department can head off the use of materials hard to procure, or which have given trouble. And even better, the Purchasing Department can help in use the development of a new product to lessen the costs of existing ones . . . as for example saving of extras on a special steel by causing it to be used in a new product in addition to an existing

COLUMBIAN

Malleable Iron
MACHINISTS' VISES



- Castings are malleable iron: —jaw faces of tool steel, accurately machined and heat treated, dowelled into jaw and replaceable when worn; — screws made of best grade screw stock, carefully threaded; — cold rolled steel handle; — swivel base models have positive locking device that holds in any position; — bases of all models are perfectly flat. Guaranteed Unbreakable.

Send for Catalog.

**Complete line of all types
of Vises and Clamps**

THE COLUMBIAN VISE & MFG. CO.
9019 Bessemer Avenue, Cleveland, Ohio
THE WORLD'S LARGEST MAKERS OF VISES

R₁ for all plastics problems

INSUROK

use exclusively!

source of supply for plastics
serves all users

use exclusively.

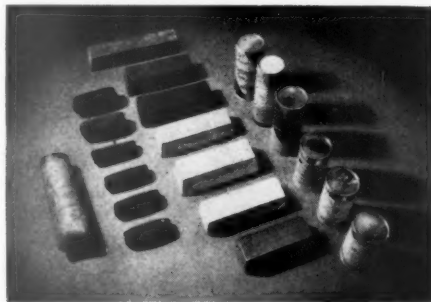
To select Richardson as your source of supply for plastics needs is to solve the major problem that confronts all users of plastics. Here, within a single organization, your most exacting plastics requirements can be met; here volume production of precision parts is normal procedure; here are completely staffed research, engineering and design laboratories.

Investigate Richardson . . . plants and products . . . and see how admirably equipped Richardson is to serve you.

Investigate Richardson . . . plants and products . . . and see how admirably equipped Richardson is to serve you.

The RICHARDSON COMPANY

Melrose Park, (Chicago) Ill. Founded 1858 Lockland, (Cincinnati) Ohio
New Brunswick, N. J. Indianapolis, Ind.
Detroit Office: 4252 G. M. Building, Phone Madison 4-9386
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COMPOSITIONS

H-VW-M Buffing Compositions have been leaders for years and combine a complete line of Tripoli Compositions for cutting down, Lime Compositions for finishing, Coloring Compositions, Polishing Tallow, Emery Paste and Cake, Hard and Soft Rouge Compositions, Crocus Compositions, Bobbing Compositions, Double Duty Compositions, Stainless Steel and Chrome Compounds, and special materials for cutting, finishing and polishing bakelite, celluloid, lacquer, wood, hard rubber, etc.

Composition Laboratories are maintained at the Matawan, Bridgeport, and Anderson plants where constant research is conducted for the improvement of finishing with compositions and for developing special compounds for unusual operating conditions.

Inquiries on all problems are welcomed and receive prompt attention.



Manufacturers of a complete line of electroplating and polishing equipment and supplies

HANSON-VAN WINKLE-MUNNING CO.

MATAWAN, NEW JERSEY
PLANTS Matawan, New Jersey . . Anderson, Indiana . . Bridgeport, Connecticut
SALES OFFICES Chicago Cleveland Detroit New Haven
New York Philadelphia Pittsburgh Springfield (Mass.) Syracuse

Adhesives?

With 8,500 adhesives formulae on record—of which approximately 900 are in active demand—Supplying 100 industries with their adhesives requirements—Pioneering in the development of glues, pastes and mucilages since 1885—With laboratories and factories in New York, Chicago, San Francisco—and additional offices and warehouses in Boston, Philadelphia, Seattle, Toronto and Montreal—

The Arabol Manufacturing Company seeks an opportunity to discuss your adhesives requirements with you.

The Arabol Representative is qualified by long and wide experience to help you solve your adhesives problems. Many of these can be solved in your factory in one day. At all times, he can call upon any of three laboratories for quick action on new or special needs.

See the Arabol Representative when he calls. Let him tell you of current developments in gums, glues and pastes for your particular line of business. It is quite likely that he will be able to show you new applications or new economies.

THE ARABOL MANUFACTURING CO.

PIONEERING SINCE 1885

Executive Offices: 110 East 42nd Street, New York, N.Y.

Factories: . . . Brooklyn . . . Chicago . . . San Francisco

Branch Offices or Warehouses:

Boston . Philadelphia . Seattle . Toronto . Montreal

ARABOL!

product. The designers are also helped to plan to use the latest or the future products of suppliers, rather than sticking to old and familiar ones. But the net result of this committee on inventory is, the inventory starts to become sensitive with the first pencil strokes of the draughtsman.

Inventory of production equipment is kept sensitive also. The Purchasing Department has a strong hand in this, for it may advise that operations now performed in the shop be bought outside, or that plans to invest heavily in new equipment be delayed in order to share production functions with suppliers. For the Purchasing Department buys services and operations as well as goods.

Recently the company considered investing in rolling mill equipment to prepare heavy steel plate for welding. The Purchasing Department found a boiler works which had this equipment with idle time. To save a financial charge by the boiler works, Worthington could buy the original material from the steel mill and own it during the rolling process. This was done. The material thus was procured at minimum cost and financial burden. Inventory was kept sensitive, for with the boiler works having other employment for its rolls, no more of the material than immediately needed with safe reserve need have the added value of the rolling operations placed upon its inventory position. By sensitive inventory the Pur-

Wanna Bet...?



Built by Pacific Pari-Mutuel Totalizer, Inc., San Francisco, Calif.

★ Quicker than the wink of a photo-finish camera . . . Controls by Guardian flash giant lite-up numerals on Race-Track Result Boards as shown above.

A complicated and costly set-up? So they figured at the start . . . but Guardian equipment did the job with a single Type "S" Stepping Relay and a few "extras" selected from Guardian's 3700 standard parts . . . at a price that let the little fellows in.

NO GAMBLE ON RESULTS

Chances are . . . 99 out of 100 . . . Guardian Engineering and Guardian Controls will do YOUR job.

It may look simple . . . tough . . . or even impossible . . . but past performances chalk up odds of a hundred-to-one that Guardian will "score" for you.

HERE'S A TIP—No charge for competent, experienced engineering advice. Send a print or sketch. Initial your letterhead for big new Relay Catalog now.



Select
RELAYS
BY
GUARDIAN



TYPE "S" Stepper and Control Unit.

GUARDIAN ELECTRIC

1635 W. WALNUT STREET

CHICAGO, ILLINOIS



TRADE MARK

ALUMINUM OXIDE
SILICON CARBIDE
CORUNDUM
(AFRICAN)
TURKISH EMERY

Refiners and Makers
of
ABRASIVE GRAINS
AND
FLOURS

AMERICAN ABRASIVE COMPANY
WESTFIELD, MASS.

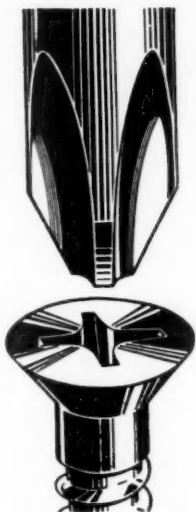
When writing advertisers please mention Purchasing

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APEX POWER BITS



are tough . . .

Not only tough, but they are heat-treated for hardness and wear-resistance as well.

They stand up under hard usage.

The precision fit of the blades gives a sure grip in the recess of the Phillips screw . . . there is more holding power . . . more driving force . . . less work spoilage . . . faster production.

No matter what power driver you are now using, there is probably an APEX-Phillips Power Bit to fit it, as there is for most makes of electric, air and spiral drivers.

And that isn't all, either . . .

Economical to use, too

APEX-Phillips Power Bits can be reconditioned for an added saving, when worn. Each reconditioning shortens the Bit approximately $\frac{1}{8}$ ". The reconditioned Bit is equal to the original in every respect—possible only because of the high grade of steel used. Long shank Bits can be reconditioned time after time before scrapping—a sizeable savings.

Send for the APEX Catalog and Manual — free, of course.

**The
APEX MACHINE
& TOOL COMPANY
Dayton, Ohio**

chasing Department deals with suppliers to the suppliers' best advantage, and this saves money for the company.

No inventory system can be kept sensitive in the absence of full written reports to the Purchasing Department. The reports in this company are adequate, but remarkable for their simplicity.

In addition to the reports by the storekeeper-secretary, the member of the Purchasing Department who sits on any inventory committee reports directly to the General Purchasing Agent. Thus the GPA gets two viewpoints of every meeting, and both of them are pertinent.

The Comptroller gives the General Purchasing Agent a monthly class by class report on all inventory at each plant, with a consolidation sheet for all plants. Records of this kind go back for years, ready for swift comparison.

A monthly metal report, item by item, comes in from each plant. It shows the present position and the future.

There is a special monthly report of finished but not immediately salable stock. Much of this stock comes from design changes made in large contract orders by the company's customers after production of the parts to be changed has been completed. Such salvage material may be used up in many ways, but it is part of the sensitive inventory.

The inventory is kept sensitive because the Purchasing Department knows what the other departments will want before they get around to needing it. This is done by the kind of committee management which leaves the Purchasing Department free to function in its own field. The temptation to let the fly wheel effect of huge contracts carry all small matters along, is avoided. The large slow moving orders and the standard quick turning ones, are made helpful to each other. Kinds of production which by their different tempos and natures might well be expected to cause conflict and confusion, are made to support each other. And all of this is done by keeping inventory clearly detailed in order that it may be sensitive.

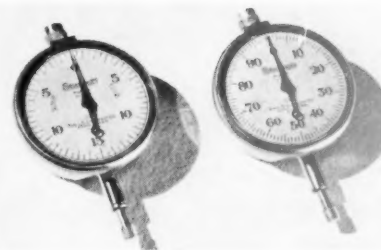
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City Purchasing Agent Joseph Lantry of Tulsa has announced that his department will not buy goods made with free prison labor in competition with private industry.

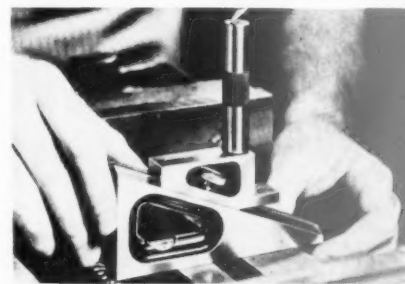
We have surplus facilities to machine, assemble and/or fabricate at low labor costs. We can handle items such as Light stampings, General Machine Products and Pipe Fabrication. Send blue prints and specifications for quotation, to Box No. 360, Youngstown, Ohio.

ATTENTION PURCHASING AGENTS: Young aggressive buyer with six years general purchasing and buying experience with large steel manufacturer and coal producer seeking change in position. Capable of taking charge or as assistant to busy Purchasing Agent. College trained, will relocate. Asset to any purchasing department. Write Box No. 922, PURCHASING, 205 East 42 Street, New York, N. Y.

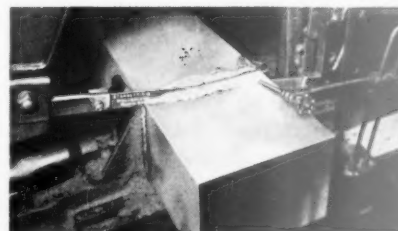
HOW TO "RUSH" PRECISION WORK



The wide choice of models, types and dial calibrations available lets you pick the right Starrett Dial Indicator for any production measuring, testing or comparing operation. Fast, sensitive actions; big, easy-reading dials insure speed with accuracy. Also a large selection of LAST WORD Indicator models.



Make every first cut "on the nose" by setting planer or shaper tools with a Starrett No. 599 Shaper Gage. Gages accurately within its range of $\frac{1}{4}$ to $\frac{63}{64}$ inches. Alignment and parallelism held to close limits. Angular slide ways eliminate lateral play. Note handy level.



Misfit hacksaw blades waste valuable time—tie up useful men and machines. Select the correct hacksaw blades for your kind of metal cutting: from the complete Starrett line. Your choice of Tungsten Alloy, High Speed Steel or S-M Molybdenum in all standard machine or hand frame sizes.

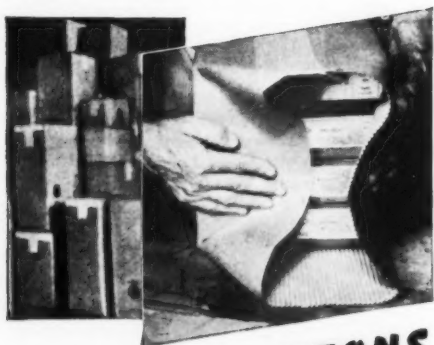
Time and expense required to make special tools can often be saved by using the standard blocks, clamps, gages and other tools shown in Starrett Catalog No. 26-P. Write for a free copy and look them over.

THE L. S. STARRETT CO.
ATHOL • MASSACHUSETTS • U. S. A.

Standardize on
**STARRETT
TOOLS**
Buy Through Your Distributor

When writing advertisers please mention Purchasing

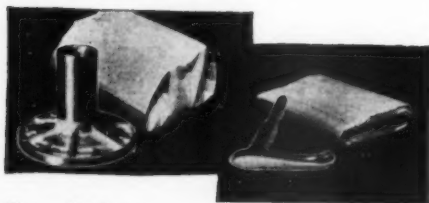
SAVE up to 60% on PACKING MATERIALS



REPLACE CARTONS with CORROFLEX

SAVE UP TO 60% by replacing cartons with Corroflex—the flexible, Speed-wrapping material with the Springboard cushioning that gives better protection against damage in shipment. SAVES TIME in the shipping room. SAVES SHIPPING COSTS by reducing weight.

Photographs, below, show typical uses of Corroflex on odd-shaped products that are normally so hard to pack. Send today for Corroflex samples and complete information on savings.



Free Aids to

Shipping Room Economy!

New Data Sheets on better, cheaper packing methods, together with sample roll of Corroflex, and automatic pencil with parcel post rates. No obligation.

SHERMAN PAPER PRODUCTS CORP.
DEPT. P9, NEWTON UPPER FALLS, MASS.

Yes sir! I want to save money on our packing materials. Please send the free aids to shipping room economy, with complete facts on Corroflex savings.

Name
Company
Address

Welding and Cutting

(Continued from page 64)

cost of a job to warrant the risk of failure by using low-grade rods.

Fluxes

The welding of certain metals requires the use of fluxes, which are reagents designed to dissolve and float off oxides or other impurities present in the welding zone. The proper flux, used with the rod during the welding operation, is a small but important ally in the making of high quality welds. When the flux material is applied in the form of powder to the welding rod, it readily enters the molten weld metal to act as a cleansing agent and to give a weld of high quality. Also, use of the correct flux makes possible the dependable welding of certain metals and alloys that otherwise would be difficult to weld.

Modern Uses of the Oxy-Acetylene Flame

Of equal importance with a description of the basic equipment units used in oxy-acetylene welding and cutting is a full understanding of what they can do. Since its commercial inception early in the century, the oxy-acetylene process has grown tremendously in scope. Where once its use was limited to welding, for repair work, and to cutting, for the rough shaping of parts and demolition of structures, it now includes many dif-

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ferent precision processes employing all the refinements of engineering skill.

Uses of the process can be divided into three general classifications—welding, whereby the flame is used to join metals; cutting and conditioning, in which a jet of oxygen is directed upon a preheated spot to sever or remove metal; and flame-treating, which employs the heat of the flame to treat metal by imparting desired characteristics to it. A quick survey of these uses is given in the accompanying table, suggesting the wide scope of the modern process and the uses to which it may perhaps be put in the Purchasing Agent's plant.

The Right Equipment

Here are a few of the important considerations to take into account when selecting equipment.

Match your welding blowpipes to your range of work. Users with a volume of welding in the medium range will require a general-purpose blowpipe. A light blowpipe reduces operator fatigue and speeds welding on sheet metal and light plate. For very heavy welding and heating, a large-capacity blowpipe saves time and gases. Ease of maintaining a constant flame, the balance of the blowpipe, convenient location of the valves and the availability of extensions or extra-long heads for heavy work are also points to be checked. It is advisable to select blowpipes which are approved by the Underwriters' Laboratories Inc., and the Factory Mutual Laboratories.

Three representative sizes of welding blowpipe are illustrated on page 63. The blowpipe at the top is for general welding, and has a range from 1/32-in. sheet to metal 1 inch and over in thickness. By removing the welding head and re-



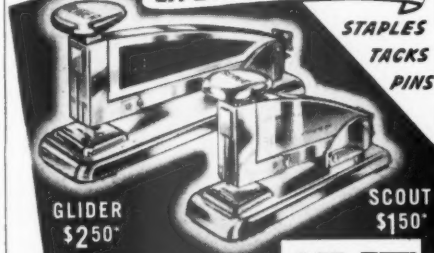
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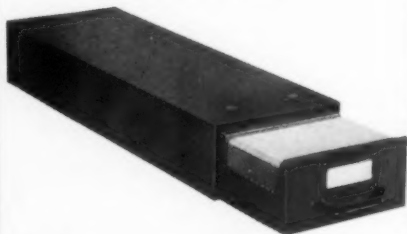
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placing it with a cutting attachment, the blowpipe can be used for cutting. The blowpipe shown in the center is the size used for light welding on metal up to 3/8-in. thick. It features ease of handling for production work especially where jigs and fixtures confine the movement of the blowpipe. The blowpipe at the bottom is for heavy welding and heating, and is the type used for welding tanks and pressure vessels and for all types of heavy heating, forming, bending and straightening operations.

Cutting Machines

The selection of the proper cutting machine is important because initial outlay and operating expense affect fabrication costs which in turn control ultimate profit. Apply the following check points to any machine you may consider purchasing.

1. Will it perform efficiently over the sizes of stock on which you usually operate?
2. Is it adaptable to modern cutting practices, such as multiple cutting and stack-cutting?
3. Has it sufficient mechanical precision to meet the tolerance requirements of your classes of cutting?
4. Is it designed to save production time and reduce operator fatigue?
5. Will the operator have accurate control of speed, blowpipe position, and stopping and starting?
6. Are separate supplies and controls provided for preheating and cutting oxygen?
7. Are replacement parts and adequate repair service readily available from the manufacturer?

Illustrative of the wide range of cutting machines are the ones shown in photos on pp. 63, 64. The portable cutting machine on page 63 weighs but 45 lb. and can easily be moved from place to place about the shop. It can be hand-guided for shape-cutting of steel up to 4 in. in thickness, and can be used for stack-cutting. Adaptors permit heavy cuts and beveling of shapes. The larger, monitor-type machine, shown below, weighs 95 lb. but is still readily portable. It is adaptable to special techniques for such processes as flame-hardening and flame-softening. Attachments are available for special cutting operations. The next-size cutting machine, which is light enough to be movable, is for production cutting within a range of 18 in. in width by 60 in. in length. It can be used either for hand-tracing or templet-tracing. The large shape-cutting machine, shown on page 64, has a cutting range of 51 in. in width by 144 in. in length, and is for mass production cutting. The multiple cutting of gear blanks by means of a circle-cutting attachment is illustrated.

Regulators

The proper selection of regulators, used to control the flow of oxygen or acetylene from the source to the blowpipe, is vital to efficient welding and cutting. All good regulators satisfy cer-

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tain basic requirements. Other advantages which may be essential to the most profitable work, are obtainable only in the best regulators. Consider the following points in regard to the regulators you may consider purchasing.

1. Have they ample capacity—do they deliver gases in sufficient volumes and at pressures suitable for your requirements?
2. Do they permit fine adjustment?
3. Do they give non-fluctuating performance?
4. Are the gauges easily legible?
5. Is the valve action positive?
6. Will the diaphragms and valve seats have long life?
7. Are the working parts easily accessible?
8. Are replacement parts and adequate repair service readily available from the manufacturer?
9. Are the regulators economical when both first cost and trouble-free life are considered?
10. Are they listed under Reexamination Service of Underwriters' Laboratories, Inc., and approved by Factory Mutual Laboratories?

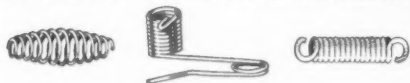
Acetylene Generators

Choosing an acetylene generator is something like choosing a heating plant. You would not buy a one-pipe hot air furnace to heat a large house, nor would you need a stoker-fed, high-pressure steam system in a four-room cottage. In

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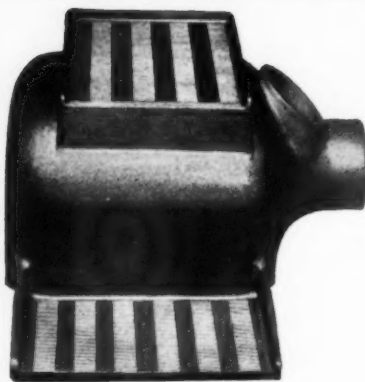


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generators, as in heating plants, it is poor economy to ask a small unit to do a big job beyond its normal capacity, and equally unsound to pay for an elaborate system far beyond your present or anticipated needs.

Here are a few points which you, as a careful buyer, would have to consider if and when you sit down to pick out a generator.

Capacity. Your acetylene requirements—especially the maximum hourly requirements—will determine the minimum capacity of the generator required. So, when welding or cutting operations are carried on continuously, consider at what intervals your generator can be recharged conveniently.

Portable or Stationary. To a considerable extent the carbide capacity of a generator determines its portability. A fully-charged generator must contain one gallon of water per pound of carbide. In a 50-lb. generator, the weight of the carbide and water is 470 lb. Although generators of larger size are sometimes mounted on motor trucks for large-scale field operations such as overland pipe line construction, a 50-lb. generator is just about the top limit for most portable use.

When there is a choice between selecting a portable or a stationary generator, consider these facts: a portable generator may be transported from place to place as the work requires, but it must be taken outdoors for recharging; a stationary generator calls for a special generator room or house, for vent pipes,

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and almost always for a distribution system to supply outlets. Recharging, pound for pound is speedier and easier with the stationary installation.

Construction. Generators are a long-term investment. They should be built to give many years of service with a minimum of maintenance expense. Look for strength and durability in construction, for welded joints, and for a strong, dependable feed mechanism. Look for simplicity and ease of operation. An important point is their acceptance and listing under Reexamination Service of Underwriters' Laboratories, Inc., and approval and listing by Factory Mutual Laboratories.

Safety Features. Every generator should have at least two dependable relief valves, one for the generating chamber and one for the hydraulic back-pressure valve to relieve excess pressure which might build up at either of these points. The hydraulic back-pressure valve should also be of sufficient size to prevent the carrying over of water into the outlet hose. The generator should also have a positive interference mechanism which will make improper operation difficult or impossible.

All welding and cutting equipment should be considered in the light of long-term investment. Since their ability to do a good job depends directly upon the precision that goes into their manufacture, first costs are decidedly of less importance than their dependability of operation and length of trouble-free service. The best equipment is strongly constructed of the best materials available, and designed by engineers familiar with industry's problems. In addition, the manufacturer's interest does not end with the sale, but continues through a well-developed process service to help the buyer use the equipment to best advantage.



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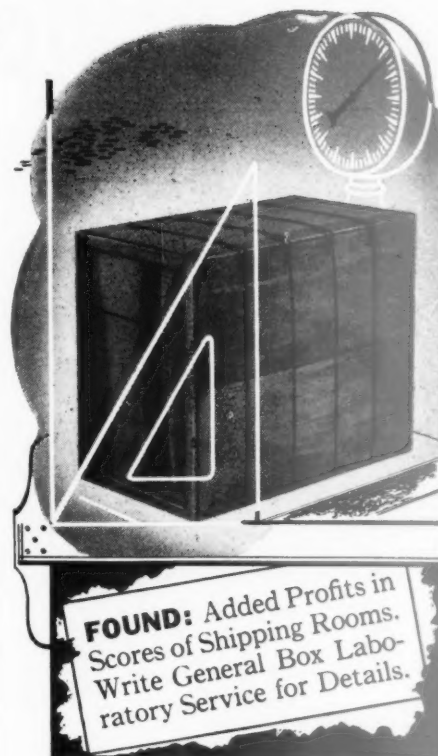
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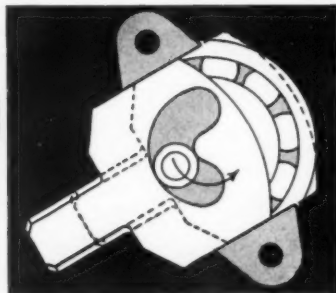
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(Continued from page 56)

A tempering temperature is then chosen to draw back the steel to a certain optimum combination of strength and toughness or ductility. The lower this draw temperature the harder and stronger will be the steel, the higher this temperature the tougher and more ductile the steel. The proper treatment depends largely upon the service characteristics demanded of the application.

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Machine tool parts are fairly representative of the applications found in most types of general machinery. For this reason Table 1, which itemizes the nickel alloy steels employed in machine tool construction, is believed indicative of nearly all kinds of machinery except those involving highly specialized service characteristics. In such cases selection of the best suited and most economical steel will be governed by the service expected of the part in question.

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Fig. 1117
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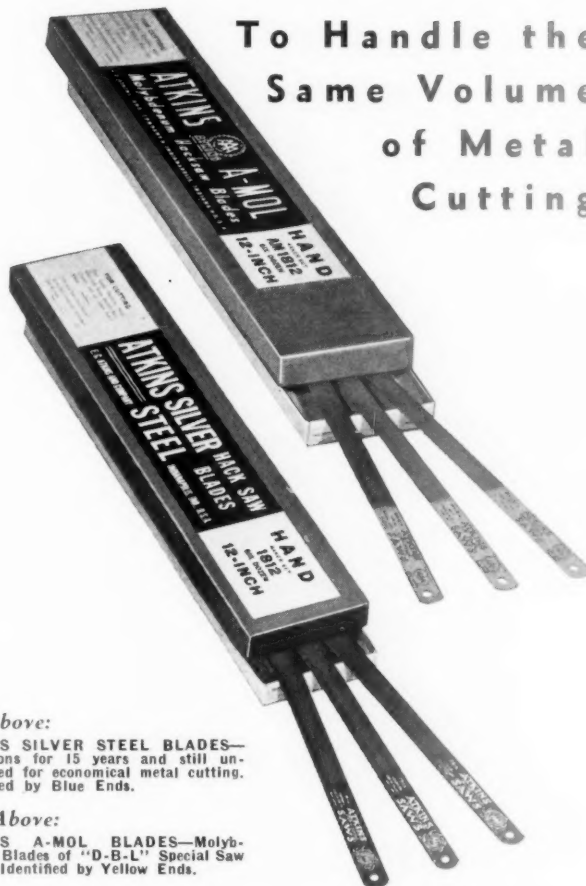
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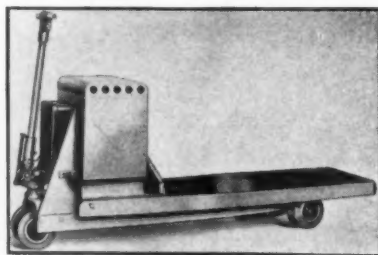
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■ A motorized hydraulic lift truck, using a small battery and only a 12 volt motor to handle loads up to 5,000 lbs., is manufactured by The Lift Trucks Inc., Cincinnati, Ohio.

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It weighs and costs but $\frac{1}{3}$ of other electric trucks. Because the truck only weighs 900 pounds, more than 80% of the battery power goes to "pay load."

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STORAGE BATTERY EMERGENCY LAMP

■ A light for locations, where there is no electrical current available or where it is hazardous to introduce long, power extension cords, is introduced by the Stewart R. Browne Manufacturing Co., Inc., New York, N. Y. It is identified as the Model SB 100. In case of power failure, operating independently of all

power circuits, this storage battery emergency lamp, can be used for light until normal service can be restored. It can be used safely when it is dangerous to use any other kind of light, at times when: repairing leaks in gas mains; working on pipe lines; entering tanks or vessels containing inflammable liquids.

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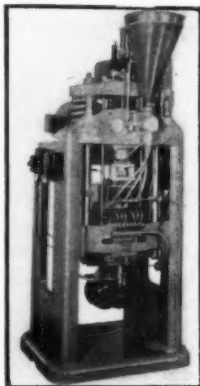
■ Users of threaded parts such as bushings, knobs, ferrules, bottle caps, etc., will be interested in a development in completely automatic molding machines announced by the F. J. Stokes Machine Company.

By means of an automatic "Unscrewing Device," which is built into the automatic molding press, threaded plastic moldings are being produced in a completely automatic operation at production rates up to 1,000 or more per mold-cavity per day.

Standard machine threads, internal or external, of any desired pitch, may be molded, the speed of the unscrewing device being readily adjustable to that of the pitch of the thread. Ejection is positive and takes place at the same time the mold is opening.

By mounting separate molds in the machine and charging each mold individually—one, two or three threaded moldings can be made simultaneously. Single, double or triple powder feed mechanisms are provided to charge each mold with an accurately metered amount of material.

The machine, being completely automatic, requires no operating attention, except to occasionally refill the hopper with molding powder and remove finished parts. It is kept in continuous operation 24 hours per day, and one man can tend a large battery of machines. Since several operations are performed simultaneously the molding cycle is remarkably short. A positive type mold practically eliminates flash, saves molding material and finishing costs. Large output per cavity reduces mold cost per piece.



FRICITION MATERIAL FOR BRAKES AND CLUTCHES

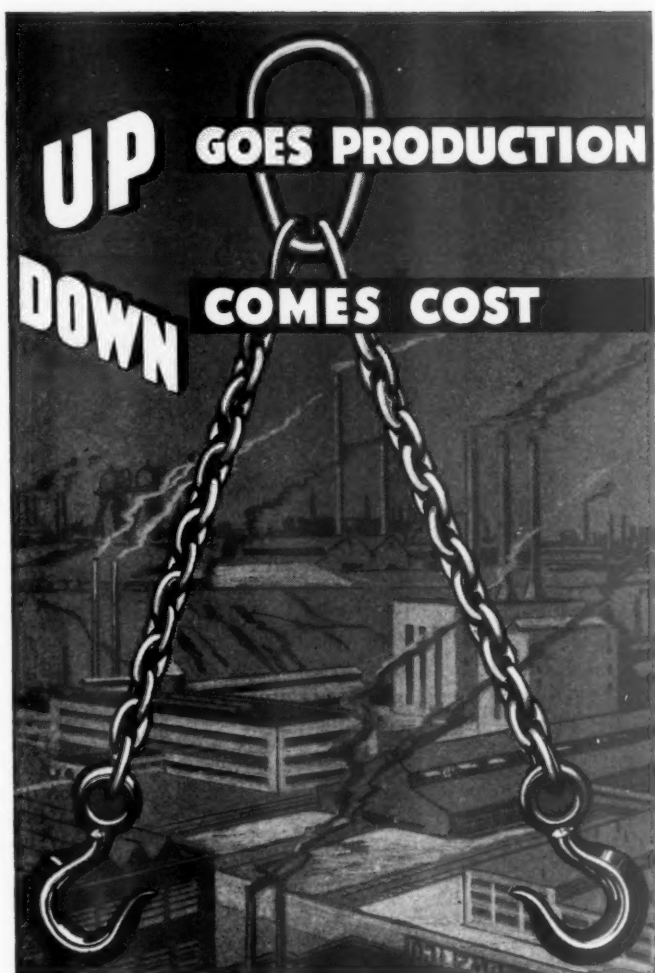
■ Entirely new performance characteristics have been achieved in the asbestos friction material for brake lining and clutch facings, developed by the Gatke Corporation, Chicago, Illinois.

This product is a unique combination of moulded and woven structures in proper balance to retain the best qualities of both.

It is claimed that severe laboratory tests and hard service on a wide range of tough applications show this woven-moulded combination maintains a high frictional coefficient with extraordinary uniformity under widely varying conditions of load and temperature.

On a number of particularly severe applications where the service life of ordinary materials is but a few days, this friction material is giving many months of trouble-free service.

It can be furnished to accurate dimensions in all shapes and sizes for brake and clutch requirements.



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SAFETY**

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Fabricated from a high-grade alloy steel of nickel and molybdenum, Herc-Alloy Sling Chains have the endurance and stamina to withstand the toughest industrial assignments. Heat treating under rigid pyrometer control insures uniformity and ductility. Herc-Alloy Sling Chains never crystallize or develop grain growth... therefore, they NEVER require annealing. Links are electric welded by the patented "Inswell" process providing 25% more metal at the critical point in the link... at the weld. For double strength, service and safety, plus cost-cutting performance, specify Herc-Alloy Sling Chains.

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FLAWLESS
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STOCK BIN ILLUMINATION

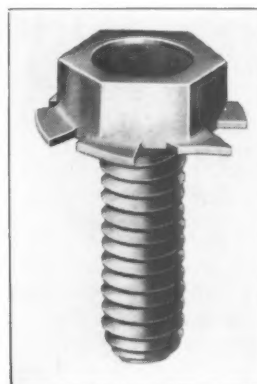
■ The illumination of stock bins is a special problem. The Stocklite, product of the Goodrich Electric Company, Chicago, Illinois, is the only fixture correctly designed for this purpose.

It is made of rust-resisting iron, triple coated with the best vitreous-fired porcelain enamel. The inside reflecting surface is pure white. The outside is finished in a pleasing, neutral gray porcelain enamel. It is a permanent fixture, not affected by the most severe atmospheric conditions.

Note the absence of glare in the aisles, the adequate illumination from top to bottom shelf and on the shelf surface. This even diffusion of light makes it possible to read comfortably anywhere in the aisle. It is the odd shape that does the trick. It is easy to install and easy to clean. There is a size to meet every requirement.



LOCK WASHER ASSEMBLY SCREWS



■ Lock washer and screw are pre-assembled and delivered in one unit, ready for application. It offers immediate production savings—no wasted washers, no lost time putting lock washers on screws by hand, cuts labor costs and speeds up assembling operations. Ordering and stock control simplified as inventories of both units are automatically balanced.

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most suitable locking or binding application required for the purpose. When fastened, vibration cannot loosen screw. Also available with Phillips recessed heads.

Product of Continental Screw Company.

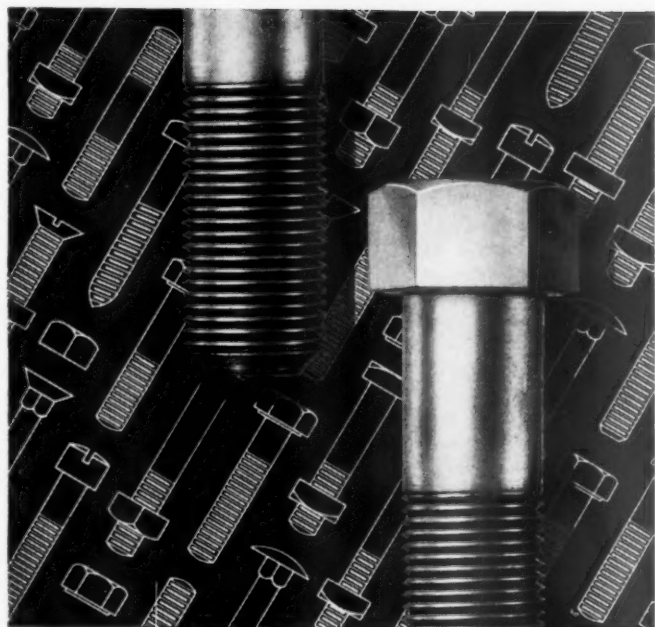
TAPPER

■ With the introduction of the Tapgun to the line, Black & Decker of Towson, Maryland, now have three powerful, one-handed, high speed production tools of identical grip, build and balance—Holgun, Tapgun and Scrugun.

This tapper weighs only 3¼ lbs., measures 9¼" overall, taps up to 5/16" in cast iron, 3/16" in steel, 3/8" in brass or aluminum. It taps at 400 r.p.m. and backs out at 525 r.p.m.

This tool augments the No. 22 tapper which has been in the line for some years and which is a heavier tool for greater capacity. The No. 22 has a capacity of 3/8" in cast iron, 1/4" in steel and 1/2" in brass or aluminum.

The Holgun and Scrugun are a powerful 1/4" drill and a high speed screwdriver for screws from No. 4 to No. 10.



TIGHTEN UP on Production Economies with **TRIPLEX** Quality CAP SCREWS, BOLTS AND NUTS

You're wise to keep a sharp eye on detail costs, especially with mounting production. On cap screws, set screws, bolts and nuts—here's where **TRIPLEX** helps you cut purchasing worries to the bone. Tripex Products help keep assembly lines running smoothly, save delays and wasteful throwouts — vital economies in a busy plant. Tripex standards assure you the benefits of accurate forming, clean threading, correct finishing and heat-treating. From exacting steel specifications to final inspection, the Tripex plant is under modern quality controls.

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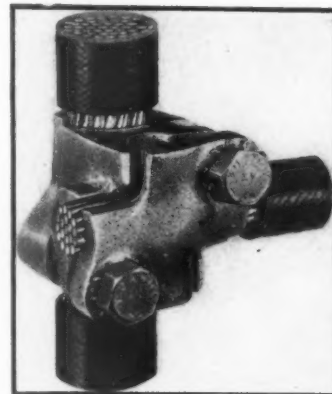
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ELECTRICAL CONNECTOR

■ A connector that may be used as a parallel tap, a T-connector, a cross connector or as an end-to-end connector and will clamp a large range and combination of cable sizes in either the main or branch connection grooves has been introduced by Burndy Engineering Co., Inc., New York, N. Y. Compact, it may be readily taped and is installed with an ordinary wrench. It is formed of high strength materials on those parts which carry the mechanical stress and high electrical conductivity material on the part which transmits the electrical current.



Ten sizes accommodate cables from No. 8 to 1000 MCM. Each clamp accommodates a range of sizes and overall dimensions on the line decrease when supplied for smaller diameter conductors.

This connector is especially suitable for use in industrial and building wiring.

MICROMETER ADJUSTING KNOB AND INDICATOR

■ A micrometer adjusting knob and indicator has been developed and is incorporated in the latest type of automatic reset timers and time delay relays manufactured by The R. W. Cramer Company, Inc., Centerbrook, Conn.

The principal features of the device are the simplicity, neatness of appearance, ruggedness of the mechanical assembly



This RIDGID

Guarantee Does Cut Your Wrench Costs

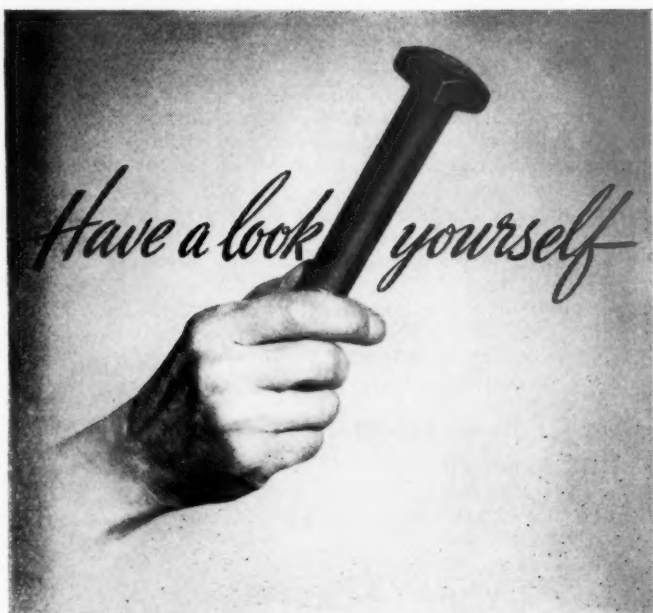


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RIDGID PIPE TOOLS



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Have a look for yourself at this R B & W product. Check its accuracy of thread. See how easily a nut starts and spins down. Test its tensile strength, and even study microphotographs of the flow of the metal. Note the accurately formed head, clean threads, smooth finish and its outstanding appearance. You will find that this cold headed bolt possesses properties that are unique for a bolt of this size.

R B & W pioneered the making of bolts and nuts almost a century ago, and today still lead in the production of a quality product. From a small beginning, three plants have grown at important locations—facilities have been built for adequate stocks to meet all needs—a sales-engineering service has been made available to advise on fastening recommendations. There is no substitute for quality—especially when backed by the guaranteed service and honest customer-relations for which R B & W is outstanding.

R B & W manufactures a wide variety of types of Bolts, Nuts, Rivets, Screws, Washers, Rods and Special Upset and Punched Products in various materials and finishes. Send for catalog and price list.



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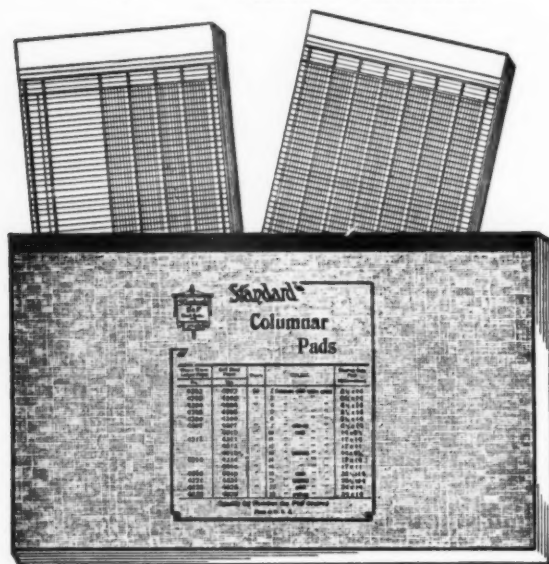
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and the ease with which it permits accurate adjustment of the timer settings.

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They bring within reach new limits of precision and accuracy since, once set, they repeat measurement of the time interval within a few hundredths of a second. This device permits setting of the time interval with an accuracy equal to or better than that to which estimation can be made of points between the dial divisions.

RATCHET THREADER

■ A self-contained 1" to 2" ratchet threader has been placed on the market by the Toledo Pipe Threading Machine Co., Toledo, Ohio.



This tool cuts perfect tapered threads with less effort than any other self-contained 1" to 2" tool. It uses high speed steel dies which are quickly changed from one size to another simply by pushing the size selector buttons and slipping the dies in the proper steps. It saves approximately half the time usually required for changing sizes. The dies are backed by tapered steps so that always smooth long tapered threads are assured. A 3-jaw rear gripping device is

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ABOVE: Same piece machined with KENNAMETAL at 730 ft. per minute.

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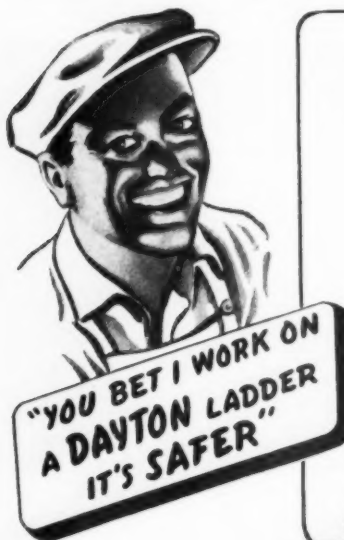
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employed. It is equipped with three broad faced chuck jaws, graduated guide posts, and large wing-head thumb screws, which assures easy, positive, accurate centering of the tool on the pipe. The 24" tubular steel handle is strong and light, and the tool is lighter in weight than any other self-contained model, yet no light weight die castings are used in its construction. The dies are deep throated and may be resharpened many times.

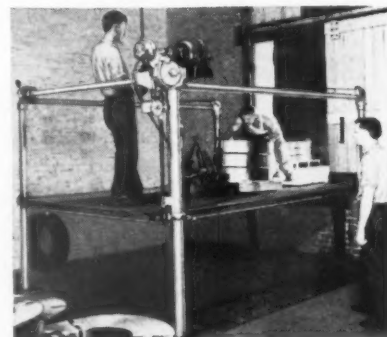
ELECTRIC LIFT

■ A simplified industrial electric lift that can be installed in just a few hours on any floor of a building, has been placed on the market by the Walker Manufacturing Company of Racine, Wisconsin.

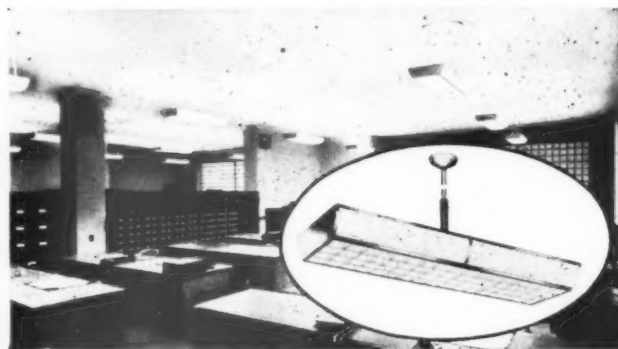
With a capacity of 7,500 lbs., the lift raises a load to any predetermined height up to five feet. Representative uses include raising and lowering loads between trucks and shipping room floors, lifting materials to machine level, and elimination of ramps and skids in manufacturing plants.

This industrial lift consists of four tubular steel posts and a steel platform which is raised and lowered by steel cables and an electric motor-driven drum assembly.

Installation can be made without special labor or plant interruption because the support posts are bolted to the floor. The unit is self-contained and can be moved easily from one location to another within a building.



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How Many?
What Combination?
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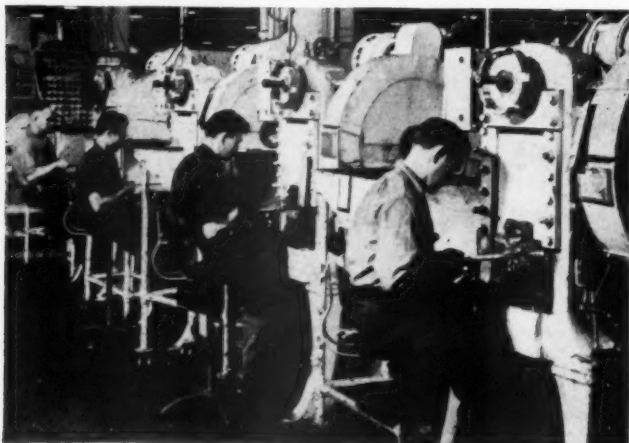


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FIRE HOSE HAS NOTICEABLE IMPROVEMENTS

■ A new line of municipal fire hose incorporating the most important improvements offered within many years has been announced by The B. F. Goodrich Company, Akron, Ohio.

Greatest single result of the improvements is to provide greatly increased flexibility under all weather conditions without sacrifice of the strength and wearing quality built into the hose.

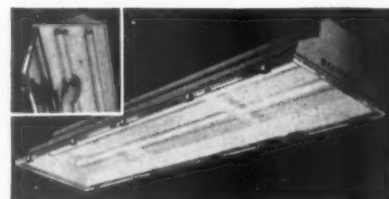
This has been accomplished through a research program which led to the development of stronger and more compact yarns and water repellent jacket treatments which do not harden in zero temperatures.

Advantages of increased flexibility are: The hose is much easier to handle when coupling at the hydrant; can be handled quicker and easier on the ladder; is racked in the trucks with less effort and time; and folds closer in racking, permitting more hose to be carried.

FLUORESCENT UNIT

■ These units feature a sealed cover construction which not only protects the fluorescent lamps and reflecting surfaces from dust and dirt, thus reducing cleaning and maintenance costs, but also extends the use of fluorescent lighting to locations requiring vapor-proof and dust-tight fixtures, opal glass diffusing fixtures or "unbreakable" glass protection of lamps and reflecting surfaces.

Through the 'Sealed-Flo' units, the advantages of fluorescent lighting for both general and localized illumination can now be provided for locations where lighting equipment is subject to even the most adverse atmospheric conditions such as steam, dampness, non-combustible dusts and vapors. These units pro-



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THEN BUY...

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SEALING TAPE**



If you consider sealing tape from all angles . . . durability, faster and better adhesion, price - - you'll decide to buy Red Streak Sealing Tape. It out-points competition in every instance. Your shipping room will appreciate your choice, too, because it lets them get out rush shipments on time. Write us today for free samples and prices.



RED STREAK
TAPE

The BROWN-BRIDGE MILLS Inc.
TROY, OHIO



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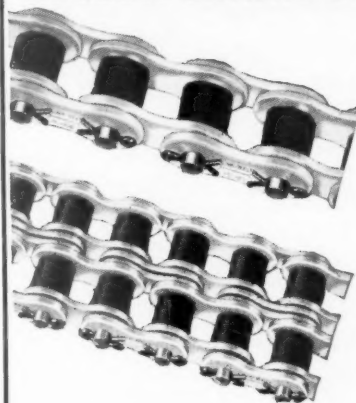
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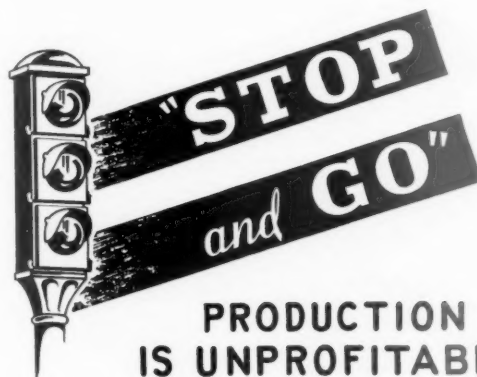


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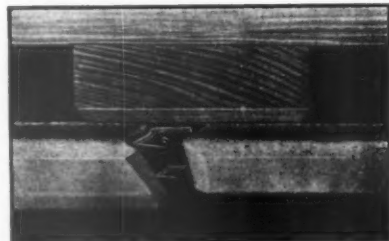
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METAL SUPPORTS

■ An ingenious little metal clip—so simple that it provokes the remark: "Why didn't I think of that myself"—is expected to revolutionize the installation of Temlok interior finishes, according to an announcement made by the Armstrong Cork Co. of Lancaster, Pa.



These metal clips provide a permanent, invisible, mechanical support which literally "floats" the individual panel against wall or ceiling bases. Tests have shown that the clips eliminate difficulties occasionally experienced when Temlok De Luxe has been installed against furring strips with adhesive. The narrow face of the furring sometimes provides insufficient bonding surface. In such cases the adhesive does not overcome the high shearing stresses caused by movement of the furring strips, in turn caused by variations in moisture content. These clips, on the other hand, provide a positive mechanical support which allows normal movement of the base without disturbing the surface of the finish, it is claimed.

The "end" view shown above illustrates how the adjacent edges of the panels are joined together, and how the panels are invisibly and mechanically supported by the clips. When nailed in place, the Tem-Clips clamp the female edge of the panel at the right. Then, as the male edge of the panel at the left is pushed into place, the prongs of the clips penetrate it, securely locking the two panels into permanent position against the furring strip.

LATHER DISPENSERS



■ Savings of as much as 65% on soap as well as greater washing satisfaction are claimed for the watrous lather soap dispensers which has been announced by The Imperial Brass Manufacturing Company, Chicago, Illinois. They use any regular liquid soap and dispense it in the form of a rich creamy lather of just the right consistency for washing.

Lather from these dispensers doesn't slip through the fingers or run off the hands. It is easy to see and makes a large volume quickly. Savings also result from the fact that liquid soap of as low as 8 to 10% consistency may be used.

Available in both individual dispensing units and in gravity soap systems. Both wall mounted and lavatory mounted dispensers, in a variety of styles, are offered.

58-INCH FLUORESCENT LAMP

■ A 85-watt 58-inch fluorescent lamp producing white light and designed especially for industrial service has been announced by the Westinghouse Lamp Division. The lamps may be operated on either 105-125-volt or 210-225-volt 60-cycle a.c. circuits in special equipment which provides direct current through the use of a rectifying device. The new white and

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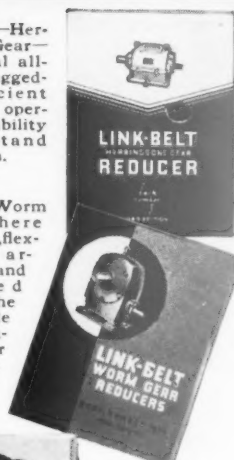
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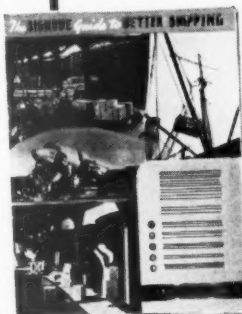
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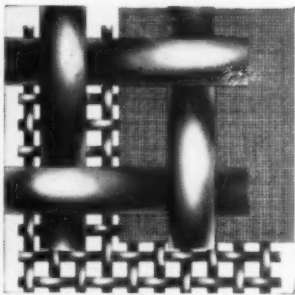
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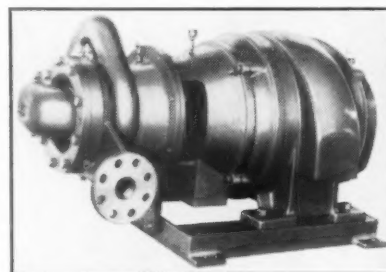
the blue-white lamps are interchangeable in single and twin fixture units available for their use.

Color of the light produced, by the white lamp is somewhat like that of the daylight fluorescent lamp. It is suitable for a wide variety of industrial uses, including those where color discrimination is important.

UNIT PUMPS

■ Allis - Chalmers

Mfg. Company, Milwaukee, Wisconsin, has recently extended its line of multi-stage "SSUnit" pumps in which the motor and pump housings are bolted together for compactness. This includes a two stage pump with 4-inch suction and 2-inch discharge that can be rated up to 275 gallons per minute against heads up to 500 feet at a speed of 3550 rpm.



Like the company's smaller multi-stage pumps of this type, this pump has cast iron casing and cover, and is bronze fitted throughout. The impellers are placed back to back to provide axial balance. The cover can be readily taken off, permitting the inside parts to be removed without disconnecting the suction and discharge piping. The stuffing box on the pump is only subjected to suction pressure.

This unit can be furnished with either an open, splash-proof, totally enclosed or explosion-proof motor. It is suitable as a small boiler feed pump, mine pump, or pipe line pump. It can be used in humidifier work, air conditioning service, oil loading and many other small capacity, high pressure services.

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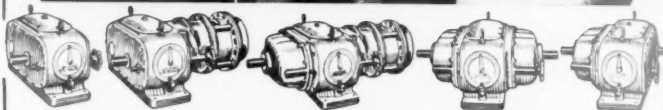
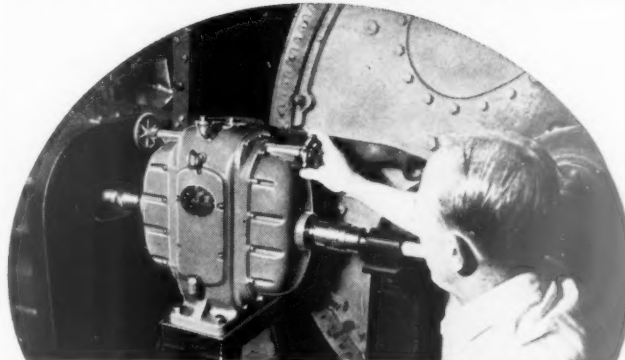


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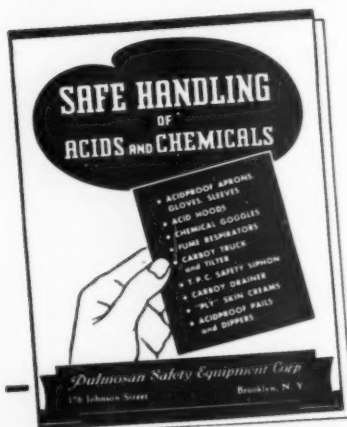
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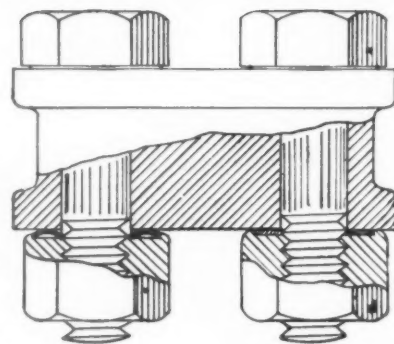
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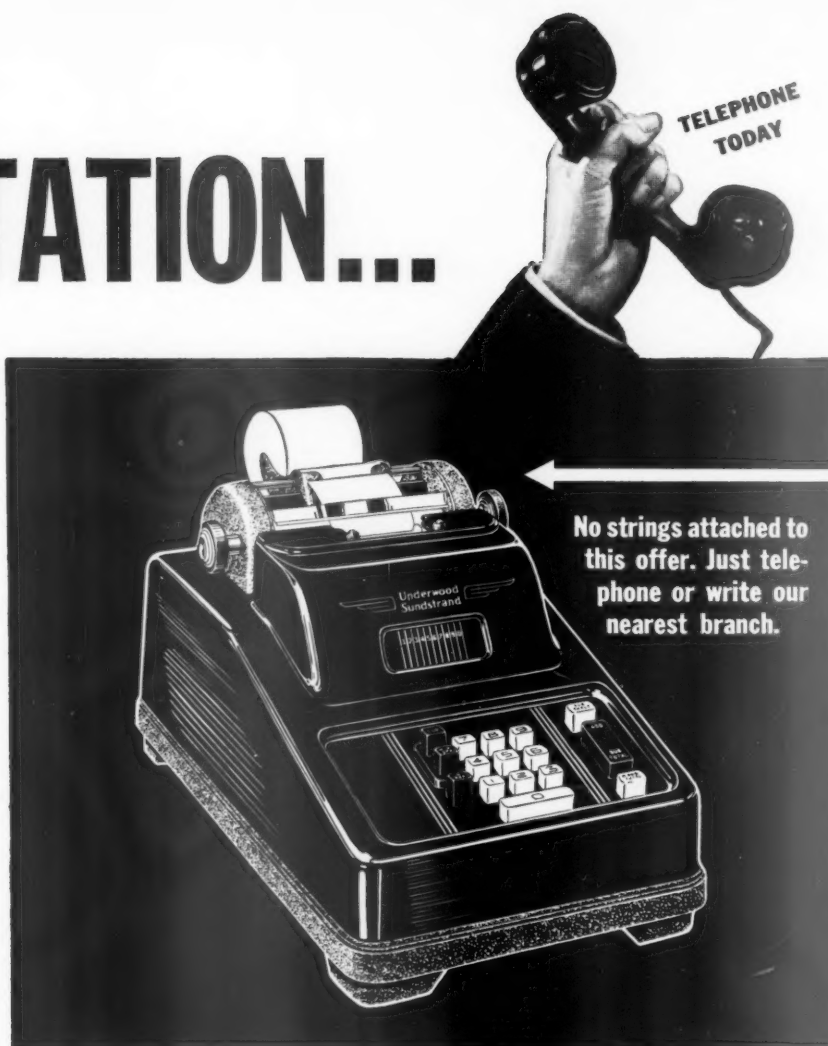
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2-Electric Welding Products—The complete line of electrodes and electric welding machines manufactured by the Air Reduction Sales Company, is described in a 32-page illustrated booklet. It discusses various types of electrodes and offers suggestions as to where each type can be used to best advantage.

3-Leather Link Belt—A new type leather link belt has been developed by Alexander Brothers. The durability and

efficiency of this belt is greater than any so far produced. Their booklet shows the double ply construction, explains additional safety factors and contains horsepower and minimum pulley diameter tables and price list.

4-Metal Wire Products—Two blue sheets covering wire products and electrical data has been released by the Allegheny Ludlum Steel Corp. These products include chromium nickel type, straight chromium type, cold heading wire, weaving wire, rope wire, spring wire, slide forming wire, welding wire, winding or foundation wire. Special wire applications are included.

5-Synchronous Motors—The larger coupled and engine type synchronous motors manufactured by Allis-Chalmers Mfg. Co., are covered in their bulletin B-6033. It is illustrated with interesting views of many significant installations and shows various types of construction used in a number of different applications.

6-Iron Fences and Gates—Iron fences are a vital necessity in protecting your property. Anchor Post Fence Company offer a catalog showing their iron picket fences made by the weld process. Their staff of engineers will gladly help you solve any fencing problem, no matter how complicated.

7-Wiring Devices—Up-to-date wiring devices are listed in a convenient arrangement, and many new items are included in a catalog published by The Arrow-Hart & Hegeman Electric Co.

8-Asphalt—What Trinidad native lake asphalt means to you and why it excels, is interestingly told in an illustrated catalog issued by Barber Asphalt Corp. Specifications for applying the asphalt over all types of surfaces are given.

9-Welding and Cutting Equipment—A catalog describing up to the minute equipment and containing recommended tip sizes for welding various metal thicknesses, is offered by The Bastian-Blessing Co. Complete data on tip sizes and gas pressures for cutting iron and steel from 1/16" to 18" thick is also included. The cutting data is complete as it includes all fuel gases.

10-Reflector Lamps—Comparative table showing how direct sealed beam reflector lamps will reduce your lighting costs, is contained in a folder offered by Beamlite Electric Corp. The chart indicates the savings effected per lamp.

11-Fluorescent Lighting—In a 46-page book, issued by Benjamin Electric Mfg. Co., charts, diagrams, tables and photographs are shown giving the facts and data needed to determine how and

where to use fluorescent lighting to best advantage in factory, office and store.

12-Automatic Lubrication—Correct lubrication is controlled lubrication. Automatic lubrication keeps every bearing supplied with the correct film required. It accomplishes this automatically and while the machine is actually operating, which is the time when a machine needs its lubrication. A pamphlet issued by Bijur Lubricating Corp. lists 14 reasons why it pays machine users to install automatic lubrication on their machines.

13-Buckets—A 40-page illustrated catalog on buckets for single drum hoists has been prepared by Blaw-Knox Co. These include single line hook-on buckets, single line direct reeved buckets, two-line hook-on buckets, controllable discharge foundry buckets, dumping buckets and ingot tongs. It is replete with service hints and application data.

14-Machine Parts—Data on hardware products material contained in a catalog issued by Boston Gear Works, Inc., gives complete specifications and list prices on crown-face pulleys, groove pulleys, cone pulleys, cast iron pillow blocks, Oilite equipped pillow blocks, ball bearing pillow blocks, shaft supports and couplings.

15-Recording Instrument—The line of instruments manufactured by The Bristol Company is briefly described and illustrated in a folder. These include automatic controllers, flow meters, thermometers, pressure vacuum draft gauges, control valves, pyrometers, pH recorders and controllers, electric recorders, humidity instruments, telemetering and remote control, automatic process control, Bristol's system of coordinated process control, liquid level recorders and controllers, tachometer and operation recorders.

16-Correct Posture Chairs—Correct seating provides comfort, protects health of all employees. In a folder distributed by the Burroughs Adding Machine Co., they list the eight points of superiority of their correct posture chairs. They are designed to provide correct seating in a healthful, fatigue-resisting position.

17-Wire Cloth and Screening—A stock list of wire cloth and wire screening manufactured by The Cambridge Wire Cloth Co., is available. These include wire cloth woven of the following metals: aluminum, brass, bronze, copper, Monel metal, nickel, nichrome, stainless steel, steel and tinned copper. Dutch filter weave, Everdur wire cloth, filter weave wire cloth, galvanized wire cloth, and Inconel wire cloth are also discussed.

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CATALOGS BULLETINS LITERATURE ON REQUEST

38- Lubrication—If you are interested in obtaining the most efficient and economical means of lubricating your machinery, an examination of the contents of a folder offered by E. F. Houghton & Co. will acquaint you with a series of specially treated general-purpose lubricants. There is a lubricant for every purpose from tiny motors to newspaper presses.

39- Portable Compressor—A six-page illustrated folder, form 2688, contains a table listing the various air tools and the number of each that the D-60 portable compressor manufactured by Ingersoll-Rand will operate.

40- Letterheads — Your letterhead constitutes a fundamental part of business procedure. In choosing a letterhead, consider Adirondack Bond for economy, efficiency and uniform value. They come in 12 colors and bright white with envelopes to match. Product of International Paper Co.

41- Speed Reducers—Power applications are simplified by using motorized speed reducers, manufactured by Janette Mfg. Co. There is a type for every purpose from 1/50 to 10 hp. Their bulletin will aid you to select a speed reducer to meet your individual requirements.

42- Self Lubricating Bearings — Data sheets dealing with Ledaloyl, a self-lubricating sintered bearing manufactured by Johnson Bronze Co., are now available. Method of installation, operating temperature, chemical and physical characteristics are explained.

43- Asbestos—"Legends of Asbestos" is the title of an interesting booklet offered by Keasbey & Mattison Co. It is an accumulation of stories about asbestos which have come down through the years and is very interesting to almost anyone.

44- Fire Protection—An 8-page illustrated bulletin on built-in carbon dioxide fire extinguishing systems, is announced by Walter Kidde and Co., Inc. Photographs of fixed carbon dioxide extinguishing systems in various types of factories are contained. The problems involved in adapting this latest method of fire protection to various industrial hazards are described.

45- Vibration Control—Quick reference table for your convenience in selecting the correct anti-vibration product and method of application is offered by The Korfund Co., Inc. Their anti-vibration products are scientifically designed for all types of reciprocating and rotating machinery, all conditions of

noise and vibration transmission, for any degree of unbalanced forces and couples.

46- Threading Equipment—Where greater flexibility and thread accuracy are important factors, investigate the advantages of collapsible taps, die heads and threading machines, manufactured by Landis Machine Co. Note the distinctive feature of their collapsible taps which permits the use of tap heads of various sizes on the same tap body to cover a wide diametrical range.

47- Pyrometers—High-speed recording at a new level of dependability and freedom from attention, is now possible with the completely redesigned, standardized, simplified and accessible Speedomax pyrometer, manufactured by Leeds & Northrup. It draws a continuous curve of moving billet, slab, rail, etc. temperature. Showing not only temperature of the work, but also temperature gradient between its ends, this chart is a reliable guide to rolling mill operations.

48- Safety Shoes—An invaluable guide on the purchase of safety shoes is offered by the Lehigh Safety Shoe Co. It explains safety shoe features and constructions in simple, non-technical terms, and tells which should be specified for longest wear and maximum foot protection under various industrial conditions.

49- Conveyors—Many different applications of mechanical elevating and conveying equipment for handling both packages and loose bulk materials are pictured in book No. 1700 published by Link-Belt Co. Particularly recommended as a book of ideas for any who are interested in handling raw materials, work in process and finished goods of every sort with greater facility and at lower cost.

50- Grinding Wheels—Protect your production with Macklin Co. grinding wheels. Complete grain and grade recommendations for aluminum oxide and silicon carbide wheels are incorporated in a handy booklet.

51- Slings—Practical, informative information written specially for use by safety men, superintendents, engineers, purchasing agents and all others concerned with handling problems, is offered by Macwhyte Co. Latest information on sling designs, capacity and weight comparisons of slings, wire rope, and chain; tables for safe working loads; typical assemblies; crane signals; breaking strength and weight comparisons are contained.

52- Bronze—The bronze manufactured by the Magnolia Metal Company is die-cast, not cast in sand. Therefore you will never get a bar shot full of tiny diamond-hard points of sand that kill valuable tools and wear shafts like sandpaper. The bronze is cored and solid bar stock for bearings. Microphotographs showing comparison between the sand cast bars and these bars are contained in their bulletin.

53- Hand Protection — A cream, which when rubbed into the skin protects it against chemicals, solvents and dirt of all kinds, against dangerous infection, annoying cracks and abrasions, manufactured by the Magnus Chemical Co., Inc., is described in an illustrated folder. The folder also discusses in detail the classifications and cause of industrial dermatitis and its prevention.

54- Rolling Steel Doors—A catalog illustrating and describing their complete line of rolling steel doors and shutters is presented by the R. C. Mahon Co. They invite you to compare the compact, positive operating mechanisms, and to study carefully the many practical improvements and exclusive features which have been thoroughly engineered into these products.

55- Electrodes—The line of electrodes for arc welding, manufactured by the Metal & Thermit Corp., is covered in a handy pamphlet. Complete data on physical properties, chemical analysis, qualifications, approvals and recommended procedures for all Murex mild steel welding electrodes as well as similar but briefer information on Murex alloy steel electrodes, are given.

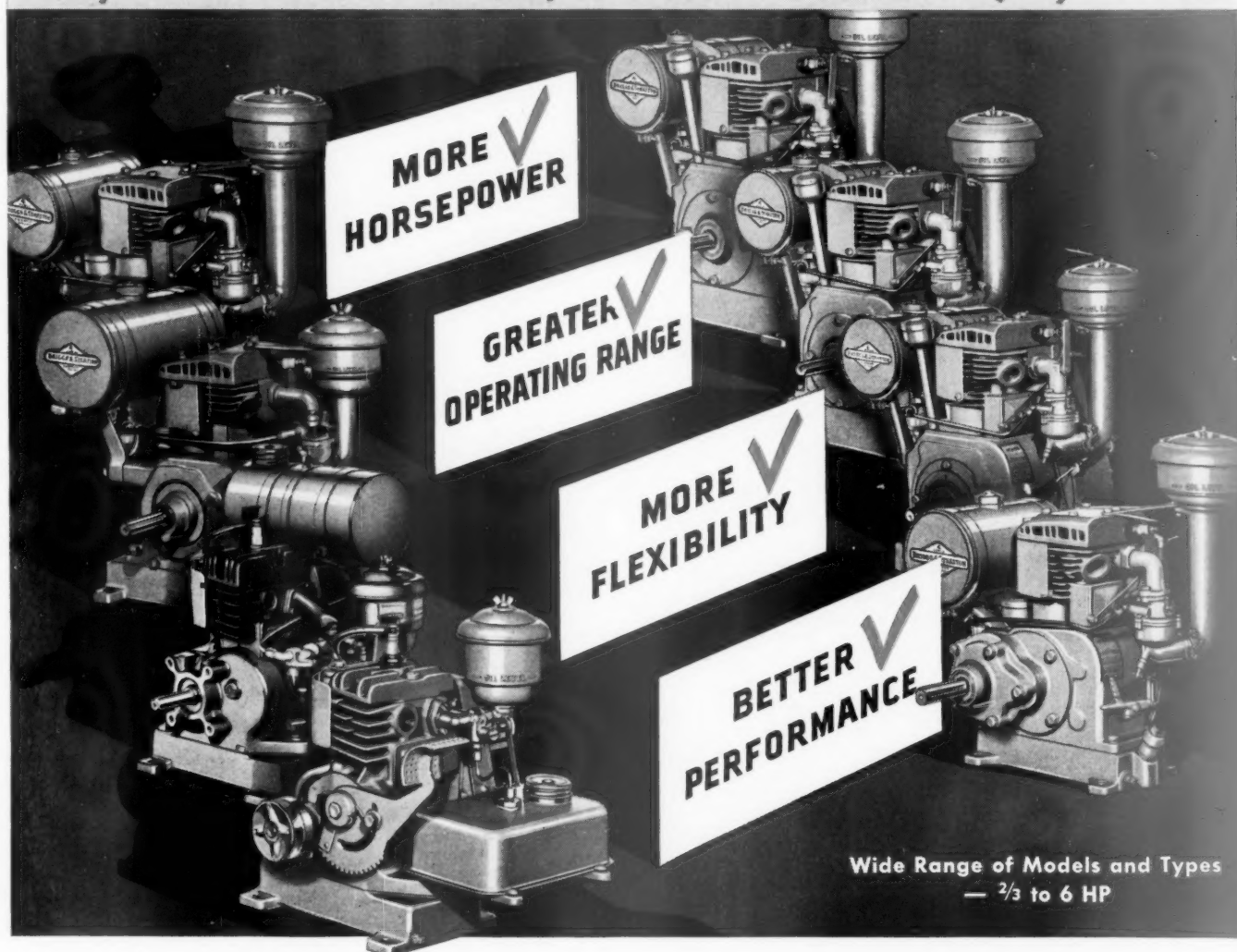
56- Hose Masks—A descriptive bulletin dealing with the application of the all-vision facepiece manufactured by the Mine Safety Appliance Co., is now available. The non-fogging, large area lenses of laminated shatter-proof glass permit complete vision through all viewing angles.

57- Scotch Cellulose Tape—Where and how to use Scotch cellulose tape is the subject of a circular offered by Minnesota Mining & Mfg. Co. This tape seals instantly without water and is available in a variety of bright colors and printed designs.

58- Typing Accessories—An exhaustive educational treatise on ribbons and carbons, as an indispensable help to the busy purchasing executive in ordering such supplies, is offered by Mittag & Volger, Inc. This book, entitled "Purchasing Agents Reference," contains several lines of their "Thousand-and-Five" ribbons and papers laid out in matched groups.

TO RECEIVE THESE BULLETINS CHECK COUPON OR POSTCARD

Buyers and Sellers of Gasoline Powered Equipment



Wide Range of Models and Types
— $\frac{2}{3}$ to 6 HP

Look to Briggs & Stratton FOR THE UTMOST IN PERFORMANCE AND DEPENDABILITY

Look with confidence to Briggs & Stratton air-cooled gasoline motors—the best known name in its field — for the latest and most advanced developments—for every application requiring $\frac{2}{3}$ to 6 HP.

The Briggs & Stratton organization — with its outstanding concentration of technical knowledge and experience, its modern plants, equipment, and skilled workers — builds gasoline motors which are more than equal to today's

most exacting power and performance demands.

You can expect and get more horsepower per dollar — greater operating range—more flexible power — more motor value from Briggs & Stratton. Machines and equipment that require gasoline motor power in the $\frac{2}{3}$ to 6 HP range, will do a better job—at lower cost—when they are powered by Briggs & Stratton.

BRIGGS & STRATTON CORP.

Milwaukee, Wis., U. S. A.

STANDARD EQUIPMENT ON

• Lawn Mowers • Tractors, Cultivators • Washing Machines, Milk Coolers • Sprayers, Dusters, Sorters, Conveyors • Grinders, Mixers, Pulverizers, Graders • Pumps, Water Systems, Compressors • Milking Machines, Separators, Chargers • Contractor and Railroad Equipment • Family Boats, Tenders, Scooters, and hundreds of other applications.

BRIGGS & STRATTON
EQUIPMENT

IT'S POWERED RIGHT WHEN IT'S POWERED BY BRIGGS & STRATTON

When writing Briggs & Stratton Corp. please mention Purchasing

Yours

CATALOGS BULLETINS LITERATURE ON REQUEST

18-Friction Clutches—Revised data covering the standard type as well as super type expanding ring friction clutch manufactured by The Carlyle Johnson Machine Co. is contained in a 10-page catalog. The clutch is of small, compact design for light powered drives. It can be used with tex-rope or cone pulleys; bevel, spiral or spur gears, sprockets, etc.

19-Transparent Tabs—The satin surface transparent tabs, manufactured by Cel-U-Dex Corp., does not interfere with the true visibility of the eight transparent colors and does not show finger marks or smudges when manipulated by perspiring or soiled fingers. A sample set of these tabs in the full range of colors will be sent upon request.

20-Split Phase Motor—This motor is the oldest and simplest type of single phase motor and is used in greater numbers than any other type. Century Electric Co. split phase motors have characteristics suitable for applications having light starting duty and have been used successfully for years to drive washing machines, ironing machines, fans, blowers, unit heaters, oil burners, small tools and many machines where modern reliable electric power is required.

21-Low-Temperature-Melting Alloy—A manual describing the uses and methods of applying Cerromatrix, a low-temperature-melting alloy, is distributed by Cerro De Pasco Copper Corp. This alloy is composed of bismuth, lead, tin and antimony, that expands slightly on solidification.

22-Mechanical Flow Meters—Complete engineering details of the operating principles and construction of the tilting U-tube meter for measuring flow of steam, gases and fluids over a wide range of pressures and flows for the purpose of keeping accurate cost-reducing records, is contained in bulletin No. 2094 offered by Cochrane Corp.

23-Centrifugal Blowers and Compressors—A 52-page catalog on centrifugal blowers and compressors is offered by De Laval Steam Turbine Co. It includes information on construction of centrifugal blowers and compressors and their characteristics, turbine and motor drives, governing, properties of gases and laws of compression, selecting a compressor for given conditions and calculating the horsepower, and calculating pressure drop in piping.

24-Public Health—Athlete's Foot, what it is, cause and treatment, is the

subject of a helpful booklet offered by The C. B. Dodge Co. Speedy, safe fungicidal action of their Alta-Co powder, means more thorough, more economical control of Athlete's Foot. This powder in your foot tubs not only helps prevent the further spread, but also reduces the number of cases where it is already present.

25-Mill White—Cut down your painting costs with Dulux, product of E. I. Du Pont de Nemours & Co., Inc. It starts whiter and stays whiter, hides better, dries faster and levels itself, collects less dirt and cleans easily, and saves money on application.

26-Pumps—A series of midget pumps is presented in a pamphlet distributed by Eastern Engineering Co. In design, performance and adaptability, this line is entirely new and is considered unique in the field of pump equipment. They are offered in several different models and specifications. They range in size from small laboratory stirrers up to 25 horsepower agitators capable of thoroughly agitating the contents of tanks of all sizes and shapes.

27-Re-Arm the American Executive—A timely booklet offered by Thomas A. Edison, Inc., to the business executives of America, points out the chief responsibility for the success of the national program for safeguarding the American Way will rest squarely on the shoulders of the American business executive. The booklet also demonstrates increased executive accomplishment through Ediphone voice writing.

28-Resurfacer—Repair your floor with ruggedwear, product of Flexrock Co. It contains Chrysotile which makes tougher feather-edges and body. A four-page folder shows how to use ruggedwear and illustrates the resurfacer in actual use in various industries.

29-Stabilflo Valves—An illustrated folder issued by The Foxboro Co. describes this rugged, yet extremely accurate valve for use in process control. A cutaway view of one of these valves, showing the guided plunger construction, as well as other recent improvements, is included.

30-Rubber Gloss Wax—A four-page folder discussing the "coefficient of slip" (slip resistance) of floor wax, is offered by The Franklin Research Co. It illustrates the latest method for testing the slip resistance of various floor waxes, offers tabulated data showing results of slip tests, one, two, and three

days after application of the waxes. Other approved devices are illustrated and discussed.

31-Crates and Boxes—The function of the General Box Company is to design a box for your purpose that will save you money. Their booklet shows "tailor-made" boxes in use in the electrical industry. Let them help you design a box for your product.

32-Wiring—An adequate wiring system is essential to the productive and profitable use of electrical equipment in modern industry. To aid the electrical contractor, the power salesman and the plant engineer in the analysis of industrial wiring systems, the General Electric Company has prepared a comprehensive handbook.

33-Mechanical Rubber—A catalog dealing with their general line of mechanical rubber, is distributed by Goodall Rubber Co. It is designed to be of particular value to the construction, petroleum, chemical industries, mines and quarries, utilities and municipalities. Specialized industrial uses from creameries to home insulating companies are covered.

34-Brazing Alloys—A 4-page folder descriptive of Sil-Fos and Easy-Flo brazing alloys, is offered by Handy & Harman. With this method you get joints that are as strong as the metals joined, defy vibration, shock and temperature change, are leak-proof and gas-tight.

35-Arc Welder—A descriptive folder on the P&H-Hansen WD-150 square frame arc welder, has been released by the Harnischfeger Corp. The welder measures less than 33 inches in length and one foot in height, delivers welding currents ranging from 200 down to 15 amperes. Only one indicator setting is needed to obtain any desired current.

36-Flexible Shaft Equipments—A 40-page illustrated catalog has been issued by the R. G. Haskins Co. covering their complete line of flexible shaft equipments. A copy is yours for the asking.

37-Paints for Concrete Surfaces—Parlon base paints (chlorinated rubber) mark a revolutionary development of great importance to everyone responsible for the upkeep or appearance of concrete, plaster, stucco, cement asbestos boards, brick, and similar materials. It resists alkalies, dries quickly like lacquer, can be used on fresh concrete, plaster, stucco, etc., resists water and water-seepage, resists scrubbing with alkaline soaps, resists traffic abrasion, mildew and mold growth, has good outdoor and indoor durability. Product of Hercules Powder Co.

TO RECEIVE THESE BULLETINS CHECK COUPON OR POSTCARD

The fast low-cost way

TO GET MORE POWER
WHERE YOU NEED IT!

INSTALL PYRANOL
TRANSFORMERS INDOORS
CLOSE TO THE LOAD



YOU SAVE TIME

It's an easy job to install a Pyranol transformer. Just set it down by the load (or put it on a convenient overhead beam), run in a light-weight primary feeder, and make connections.

YOU SAVE MATERIALS

Because you install the transformer close to the load, the heavy-copper secondary feeders are short, materially reducing the cost. And since Pyranol, the transformer cooling liquid, is nonflammable, you save the cost of a fire-proof enclosing vault.

YOU SAVE ON OPERATION

The short secondary feeders between transformer and load provide better voltage, reduce line losses, and thus give higher over-all operating efficiency. And because Pyranol is nonsludging and is chemically stable, maintenance on a Pyranol transformer is practically negligible.

Add up all these savings—figure out what they can mean in *your own plant*. You'll find that for fast, economical expansion of your power system, Pyranol transformers are the time- and money-saving answer. Your own electrical superintendent can give you additional information—or call our local representative for complete details. General Electric, Schenectady, N. Y.



LOAD-CENTER POWER FOR WELDERS—Three 635-kva Pyranol transformers, an easy-to-install power supply for these large resistance-welding machines. Locating the transformers close to the load saved on secondary copper—and no vault was required.



MORE POWER FOR STEEL OUTPUT—A simple, low-cost installation of three Pyranol transformers. Secondary runs are short. The transformers are located right at the load—without a fireproof vault.

Write for Bulletins GEA-2048, "Pyranol Transformers," and GEA-3377, "Ways to Save with Load-center Distribution."

GENERAL  ELECTRIC

Yours

ADVERTISING PAGES REMOVED

CATALOGS

BULLETINS

LITERATURE

ON REQUEST

59—Buying Economy—Every executive is increasingly conscious of the need for reducing costs. Buying costs can be reduced in dealing with the industrial distributor who carries stock to supply the buyer's needs as they arise. Buyers will find it to their advantage to include a larger number of separate items on their individual purchase orders. This will tend to lower the cost of operating their departments, increase their own efficiency, and enable wholesale distributors to render better service and supply their needs more promptly, according to a booklet of The National Supply and Machinery Distributors' Association.

60—Anti-Friction Bearings—A discussion of the fundamental reasons responsible for the vastly increased use of modern roller bearings, customarily referred to as anti-friction bearings, is contained in a booklet offered by New Departure.

61—Insulation Research—A 32-page booklet on research which shows by means of many photographs and the briefest kind of text how a new insulation or protective sheath is developed, put into production and finally checked and tested to a fare-thee-well in laboratory and proving ground, is offered by The Okonite Company. It explains step-by-step in simple language what procedure is followed.

62—Dust Control—Control the dust hog. Pangborn Corporation have issued a folder explaining the many advantages gained in installing dust control equipment. Work is more efficient, machinery runs more smoothly, production sched-

ules follow through, lighting is better, plants are freed from the danger of dust explosion, maintenance costs are cut down, valuable materials are salvaged, products are not needlessly smudged or begrimed, walls, supplies, windows, paint-work are not made dingy.

63—Lockers, Cabinets, Shelving—Detailed specifications and prices of heavy gauge steel lockers, cabinets and shelving are contained in a pocket booklet offered by Penn Metal Corporation of Pennsylvania. It summarizes applications and points out possible savings in floor space, materials handling time and tool control operations.

64—Reduction Gears—Data, dimensions and rating tables on the reduction gears manufactured by The Poole Foundry and Machine Co., are contained in simple form in a 36-page booklet. The gear is a self-contained mechanical unit interposed between and directly coupled to the prime mover and driven unit. It may be used for either increasing or decreasing speeds.

65—Bond Paper—Excellent printing results at a moderate cost is the claim made for Rising Interlace. This paper prints equally well by letterpress or offset lithography, as is demonstrated in a folder offered by them. Swatches are contained in the folder showing the variety of weights and colors available in this line. Complete specifications are given.

66—Boiler Plug—Put profit into boiler plug replacements with collapsible fusible boiler plugs manufactured by Rockwood Sprinkler Co. These are quickly removed, eliminates replacement

delays, reduces work in fire boxes, no drilling or chiseling, saves hands from cuts, bruises and scalding, reduces length of steam shut-downs, protects boilers against cracking, are non-refillable.

67—Centrifugal Blowers and Exhausters—A 20-page bulletin No. 120-B11, illustrating and describing their single and multi-stage centrifugal blowers and exhausters, is offered by Roots-Connorsville Blower Corp. Pressure volume curves and information regarding operating characteristics of this equipment are given.

68—Steel—New products, analyses and sizes, plus an increased number of helpful charts and tables combine to make Joseph T. Ryerson & Son, Inc., 256-page stock list a most important addition to the steel buyer's reference file. The book contains SAE standard specifications, a physical properties chart showing machinability of more than 50 steels, standard gauge comparisons, weight tables, etc.

69—Temperature Regulators—Self-operated temperature regulators for controlling flow of steam, gas, water or brine, are covered in catalog No. 52, published by Sarco Co., Inc. A special feature is complete capacity tables for several different valve styles to meet control problems in connection with industrial process work, water heating, air conditioning, refrigeration, etc.

70—Metals Engineering—An interesting booklet entitled, "Masters of Metal," is offered by Scovill Manufacturing Co. The steps taken, from an idea to the finished product, are outlined and illustrated. Their engineering service is offered in connection with the development of products which they produce on a made-to-order basis for the prospective customer.

CHECK THE LITERATURE YOU WANT ON THIS COUPON OR POST CARD AND MAIL.

PURCHASING, 205 East 42nd Street, New York, N. Y.

OCTOBER, 1940

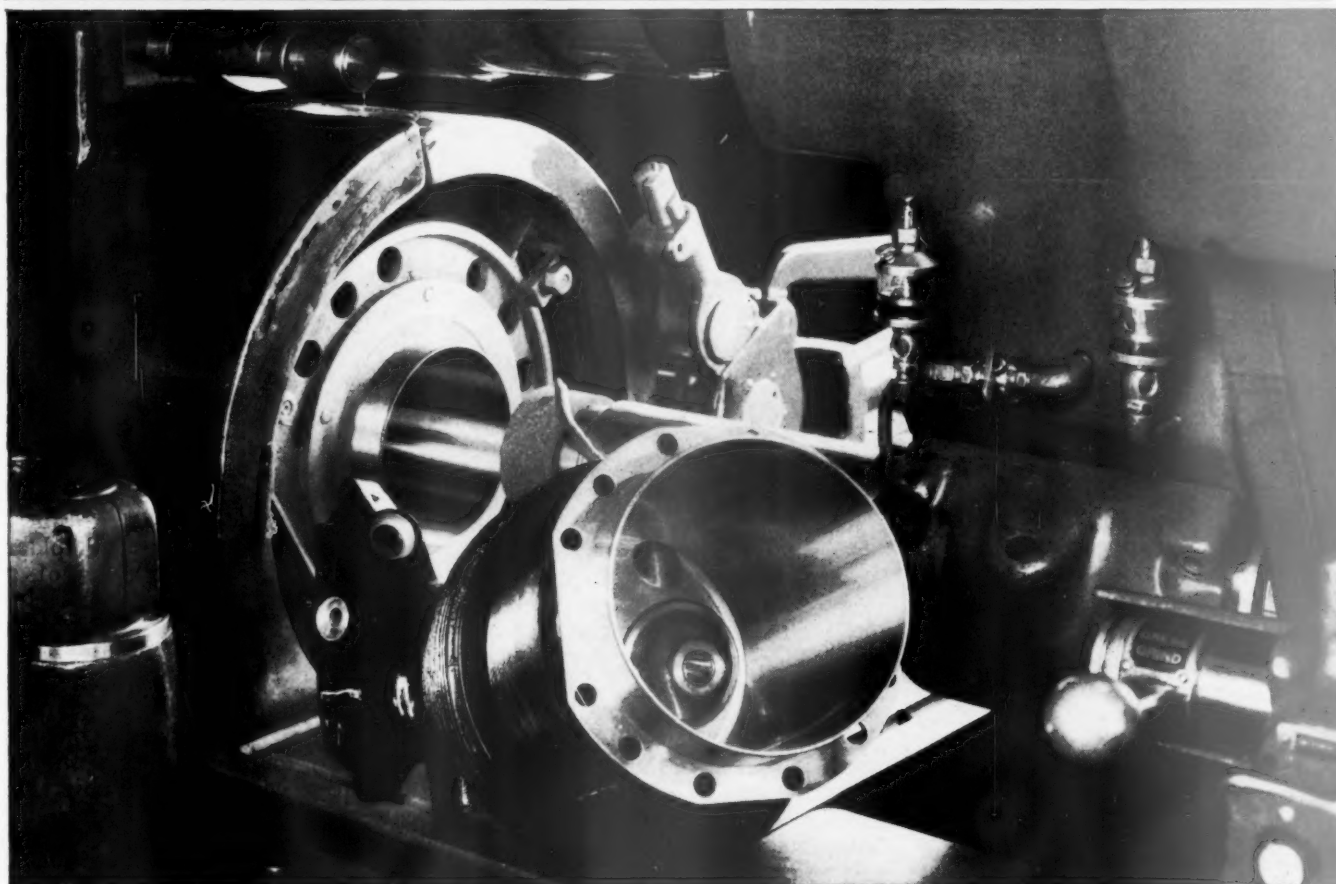
I wish to receive the catalogs checked below. It is my understanding that there will be no charge for this service.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

NAME COMPANY
TITLE ADDRESS
CITY STATE

MACKLIN

Grinding Wheels



Metals and machines for mobilizing defense production require the highest quality grinding wheels. Macklin Grinding Wheels are made in all sizes and shapes and in all grain and bond combinations. They will "Protect Your Production" on all types of grinding jobs. Illustration shows Macklin Internal Wheel finish grinding cylinder barrels for airplane motors in one of the large airplane factories meeting the exacting demands of close tolerance and finish.

Only grinding wheels of the highest quality can be used on such operations. They must be uniform in grade, cool and fast cutting and must produce a high finish. Macklin Grinding Wheels are being demanded for many operations in the defense program as well as throughout all industry.

Ask for the services and suggestions of a Macklin Sales Engineer.

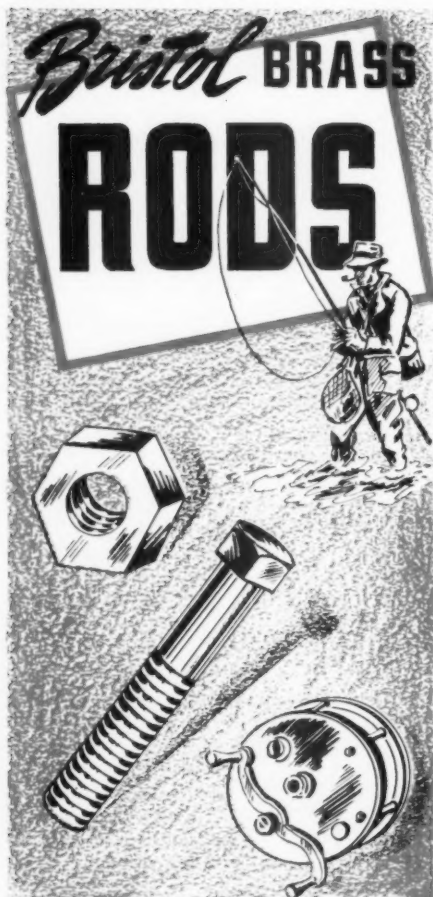
MACKLIN COMPANY

Manufacturers of GRINDING WHEELS—JACKSON, MICHIGAN, U. S. A.

Distributors in all principal cities

Sales Offices:—Chicago - New York - Detroit - Pittsburgh - Cleveland - Cincinnati - Milwaukee - Philadelphia

When writing Macklin Company please mention Purchasing



USED FOR THOUSANDS OF FABRICATED PARTS

Tell us your FABRICATING PROBLEMS. We will gladly send samples and suggestions without obligation. We do not fabricate above parts ourselves.

ROUND, SQUARE or HEXAGON rods in sizes 1/16 to 3 1/2 inches generally available from stock.

UNIFORM TEMPER assures smooth grain and finish which greatly prolongs die and tool life.

FREE - CUTTING BRISTOL ROD increase productions . . . edges and faces are held sharp and true . . . finished product is clean and bright.

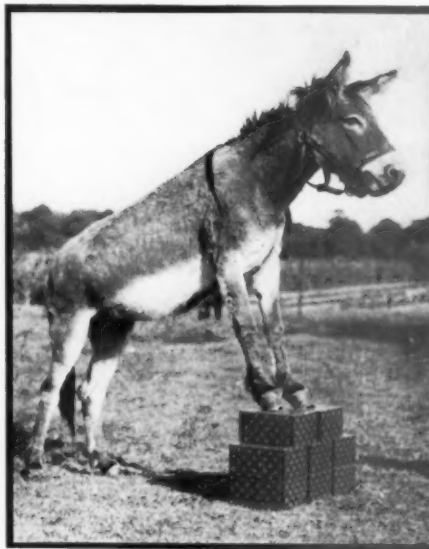
SPECIAL BRISTOL ROD is made for full knurling, free turning and swaging, also for forging.

**THE
BRISTOL BRASS CORP.**
BRISTOL, CONN.



Brass and Copper Alloys
SHEET — ROD — WIRE
90 Years Experience
ON QUALITY BRASS

F.O.B. *Philosophy of buying*



POSSIBLY a trifle cumbersome for general industrial acceptance, but decidedly timely, is the strength test on paper boxes used (strictly for publicity purposes) by the National Metal Edge Box Co., Philadelphia, and illustrated herewith. The elephant stunt originated a couple of years ago, and was quite widely and effectively used to show the rugged nature of the company's product. Then in this election year the company's diplomatic corps strongly urged a companion piece, both as an appeasement program and as evidence of political neutrality. In contrast to the placid elephant, the donkey proved to be anything but a tractable model but a combination of cajolery and brute force, coupled with the experience and skill of Newt Hartman, *Philadelphia Evening Bulletin* photographer and specialist on zoological subjects, finally brought the desired results. Have you a little elephant, or donkey, in your receiving department to make the test?

SOME Purchasing Agents have been astonished—and disturbed—in recent weeks, to receive a mail solicitation on pattern lumber, reviving the old premium appeal that was outlawed from legitimate industrial purchasing practice years ago by every conscientious purchas-

ing man. The commodity which the company has for sale is somewhat obscured by the fact that the first two pages of the four-page folder are devoted to photographs of a radio set, candid camera, desk lamp, electric coffee maker, bed blanket, bathroom scale, temperature and humidity indicator, field glasses, and electric clock, with the large captions "FREE" and "Gifts you will be happy to own." Along on the third page we get to the subject of pattern lumber, with the explanation that the radio or camera will be sent "free" with a \$250 lumber order, any of the other items with a \$100 order. An "easy order blank" is enclosed, the insidious feature being the fact that it is in reality two order blanks, to be torn apart on a perforated line, neither half bearing any reference to the other. The top (lumber) order is a standard business form with the name of the vendor company and the customer and all the usual details applying to a normal purchase transaction, omitting any mention of the "free gift" involved. The lower (gift) order shows no company names, only a personal mailing address and identification of the premium item.

The economics and the ethics of this proposal need no comment here. F.O.B. predicts that the reaction will prove to be like a boomerang which circles its objective and comes back to sock the sender.

When writing The Bristol Brass Corp. please mention Purchasing

WE have it on no less an authority than Alfred P. Sloan, Jr., of General Motors, that keen, aggressive purchasing is responsible in large part for the development of executive leadership in the great automotive industry. The testimony is recorded in the fourth article of his series, "Adventures of a White-Collar Man," published in the *Saturday Evening Post*. (Page 44, issue of September 14th). The early days of the industry were marked by exceedingly sharp competition for the parts business. These suppliers, generally speaking, had been successfully operating their enterprises for many years before there had been any thought of automobiles, and consequently had management and experience even superior to that of the rapidly growing new field which they sought to serve. The result of that competition, and the urgent pressure exerted by automotive Purchasing Agents who called for the utmost efficiency in parts manufacture, was to intensify the experience and proficiency of these manufacturers. It developed an ability that brought them rapidly to the top in the subsequent evolution of the industry, when many of the supplier companies were integrated with the larger manufacturing organizations. Mr. Sloan points out—and his statement is a significant commentary on a purchasing value that is frequently overlooked—that a great many of the leading executives in motorcar manufacturing entered that industry by way of the parts business, where they learned their stuff by meeting the high standards exacted by aggressive purchasing men.

This is the year of silver anniversaries in the purchasing world. Outstanding in national importance was the N.A.P.A. Silver Anniversary Convention at Cincinnati in June. As we entrain for the 25th Anniversary meeting of the Pittsburgh Association, we are also reminded of another Silver Anniversary that has quietly slipped by. It was just twenty-five years ago, this month, that Purchasing Agents received Volume I, Number 1 of "The Purchasing Agent," the first publication of national scope devoted specifically to purchasing affairs and to the cause of the purchasing man in industry and government. "The Purchasing Agent" changed its title to *PURCHASING* in 1932.

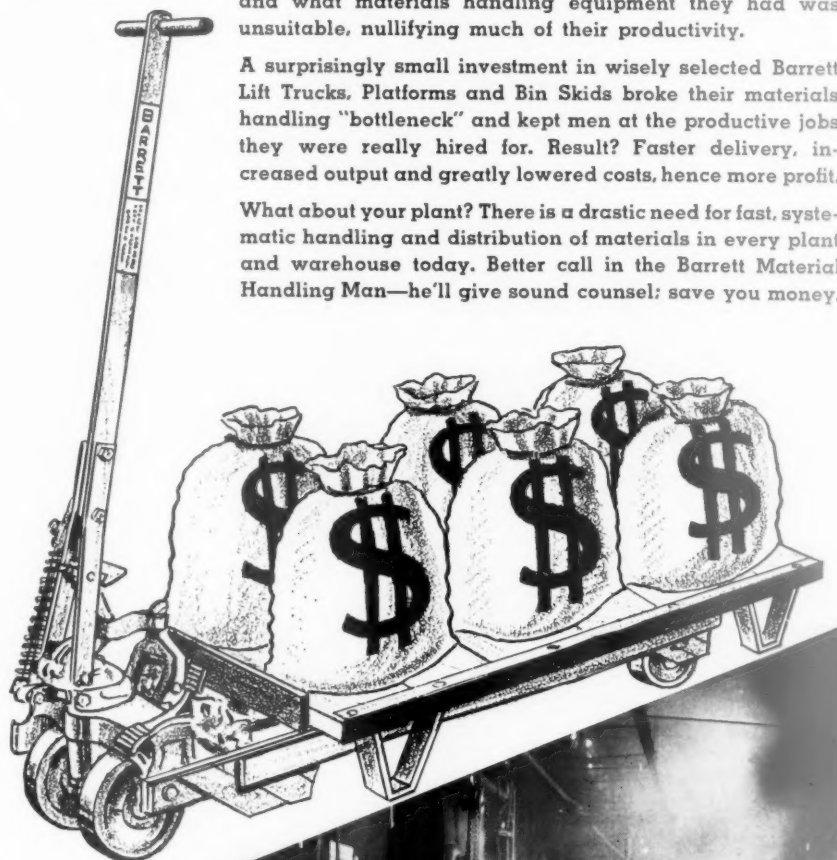
They Found a Mint in Their Own Plant!

It was a happy day for a large forge shop when the Barrett Material Handling Man happened along to check up on their material handling equipment requirements.

This firm was "tops" on forging, heat-treating, machining and wherever production was concerned, but they were in a tangle on materials handling. They had the best hammers and machine tools money can buy, the best hammersmiths and machinists to man them, but it was found that skilled labor was doing much of the "carrying" and what materials handling equipment they had was unsuitable, nullifying much of their productivity.

A surprisingly small investment in wisely selected Barrett Lift Trucks, Platforms and Bin Skids broke their materials handling "bottleneck" and kept men at the productive jobs they were really hired for. Result? Faster delivery, increased output and greatly lowered costs, hence more profit.

What about your plant? There is a drastic need for fast, systematic handling and distribution of materials in every plant and warehouse today. Better call in the Barrett Material Handling Man—he'll give sound counsel; save you money.



BARRETT

BARRETT-CRAVENS COMPANY

3280 W. 30th Street, Chicago, Illinois

Branch Offices and Representatives in 70 Key Cities



When writing Barrett-Cravens Company please mention Purchasing

PUT UP THE *American* *Line of Defense...* Against All Hazards from Head to Ankles



Improved Ful-Vue Goggle (Pat.) has new double-braced bridge; comes in 3 eye and bridge sizes. 6-Curve Super Armorplate Lenses deep-curved for extra strength.



Super Duralite-50 Goggle is lightweight, sturdy, permits wide angle vision, provides extra ventilation. New, non-rubber headband. Super Armorplate Lenses standard.



R1000 Respirator provides "interchangeable" protection against Type ADust, non-lethal concentrations of fumes and odors. Three types of cartridges are interchangeable.



AO Gloves and Mittens protect against heat, flame, hot metals, rough materials and acids. Supplied in a full range of styles, sizes, and protective materials.



New 440-4-A one-piece Welding Helmet protects face and neck. Genuine leather sweatband. No. 4 floating headgear provides positive adjustment.



AO Safety Leggings are supplied in chrome tanned leather, fire-resisting duck, and "Sturdy-Weave" asbestos. All sizes and styles. Snug-fitting, comfortable.

★ ★ The American Line of Defense against industrial hazards covers all protection requirements from head to ankles. Including goggles, helmets, respirators, hoods, and a complete line of safety clothing, this AO line is backed by unmatched manufacturing facilities and uniformly high standards of quality.

These American products, plus AO Safety Service, are available to you through 263 company branch offices in principal industrial centers from coast to coast.

On all your safety requirements, call upon the sound, practical experience of your neighboring AO Industrial Representative. He'll help you secure your defenses against all hazards, show you why it's good business and good economy to "Buy American, By American."

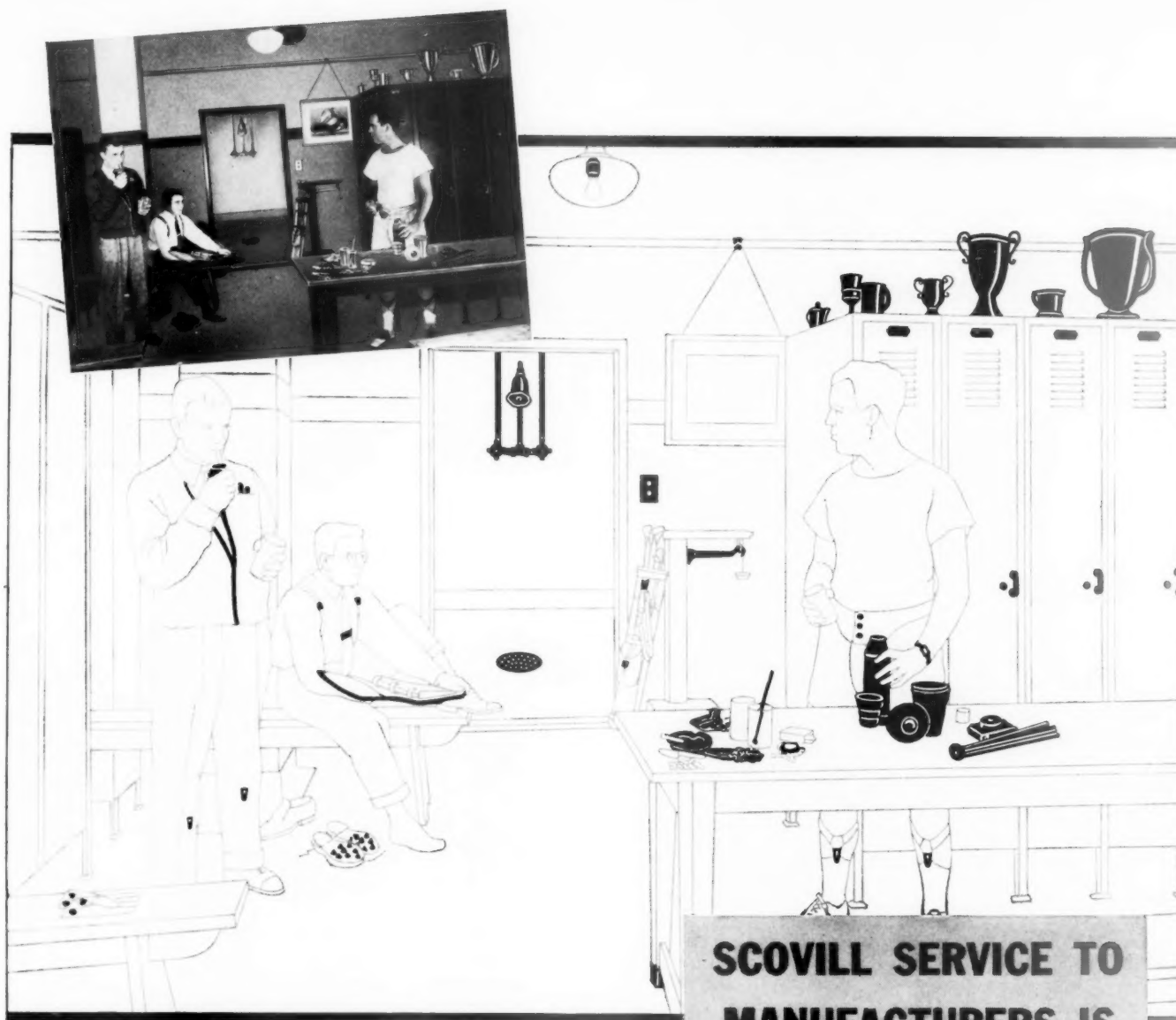


American Optical Company

Southbridge, Massachusetts

MANUFACTURERS FOR MORE THAN 100 YEARS OF PRODUCTS TO AID AND PROTECT VISION

When writing American Optical Company please mention Purchasing



EVEN AT PLAY..

**SCOVILL SERVICE TO
MANUFACTURERS IS
AMPLEY IN EVIDENCE**

Wherever your day's work and play take you, you'll see signs of Scovill's services to Industry: miscellaneous and sundry metal parts made to order for other manufacturers to assemble into their own products—complete products which other manufacturers merchandise and sell without further processing—parts and products made by other manufacturers from Scovill's Brass Mill Products.

Scovill's contract manufacturing department is equipped to manufacture from brass, copper, aluminum, steel, and other base metals and alloys. Turned, cold headed, and

forged parts; screw machine products; drawn and stamped parts; etc., are turned out in quantities on high-production, versatile machinery. Scovill's service also includes facilities for enameling, plating, lacquering, and other special finishing.

Whether the product you're concerned with is a refrigerator or a steam condenser, a lipstick or a golf shoe, a fountain pen or an adding machine, Scovill may be able to help you put it out faster, better or at less cost.

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When writing Scovill Manufacturing Company please mention Purchasing

APEX

PRODUCTION TOOLS

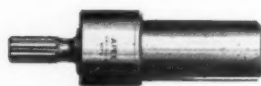


Safety Friction Chuck

The Apex Safety Friction Chuck maintains the friction setting . . . end thrust does not affect the setting . . . tool can be used in any position . . . and changed while machine is running . . . chuck slips before the tool breaks—saves time and manual labor.

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Universal Socket Wrenches are available with adapters to fit all kinds of speed braces and extension shanks . . . for any size opening within the capacity of the Universal Joint . . . Socket Wrenches for electric and air-operated nut runners are available in two types—Standard and Tension . . . operate without binding or breaking . . . sockets are replaceable.

Write for Catalog No. 12

The
**APEX MACHINE
& TOOL COMPANY**
Dayton, Ohio

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PERSONALITIES in the NEWS

Edson W. Collins has been appointed Purchasing Agent for the Norwich Pharmacal Co., Norwich, N. Y., succeeding Guy L. Marsters, whose promotion to the dual post of Director of Purchases and Eastern Sales Manager was reported last month. Mr. Collins has been first assistant to Mr. Marsters.

Arthur P. Hickcox, Director of Purchases for the Scovill Mfg. Co., Waterbury, Conn., has been made a vice president of that company. Mr. Hickcox has been with the Scovill organization thirty years, most of that period being in the purchasing department, and has long been active in the national and local program of Association work.

J. J. Madden has been appointed Purchasing Agent for the Westinghouse Electric Elevator Co., Jersey City, N. J., succeeding the late Vincent O'Neill.

M. J. Roche has been named Purchasing Agent for the Gotham Silk Hosiery Co., New York City, succeeding Claude T. Burk.

G. W. Searles is in charge of purchases for Precision Castings Co., Fayetteville, N. Y. Vic Newell is now devoting his entire time to traffic.

C. B. Singleton, for the past seventeen years Purchasing Agent for the Shell Oil Co. at St. Louis, has been transferred to the company's New York office as General Purchasing Agent and in charge of the Stores Department. He succeeds A. K. Eaton in this position. W. H. Bratches, formerly Assistant Purchasing Agent at St. Louis, also comes to the New York office in a similar capacity. Mr. Singleton has been long associated with the purchasing department of the oil industry. He was a charter member of the Tulsa Association, and has been active in the St. Louis group.

E. J. Root has retired as Purchasing Agent of the Connecticut General Life Insurance Co., Hartford, after a long record of service in that office. He was for several years treasurer of the Connecticut Association. George A. Drieu, Assistant Secretary of the company, has assumed the purchasing duties.

J. H. McNally has been named General Purchasing Agent of the Standard Milling Co., and Purchasing Agent of the Flour & Cereal Division of Hecker Products Co., in New York City. Previously associated with the company's purchasing department in New York, Mr. McNally was transferred to Chicago in 1938 and now returns to accept increased responsibilities.

John A. Rein, formerly Purchasing Agent for the Gabriel Co. and Pressure Castings, Inc., has resigned to enter business on his own account as secretary-treasurer of Rein & Webster, Inc., manufacturers' agents, with offices in Cleveland. The new company will serve manufacturers in Ohio, Pennsylvania, Indiana and Michigan.

Robert W. Woodham has been appointed Purchasing Agent of the Baringer hotel system, with headquarters at the Hotel Columbia, Columbia, S. C.

Harold A. Knight, for the past several years metals editor of the New York *Journal of Commerce*, and author of a number of informative articles in PURCHASING, has been appointed news editor of the magazine *Steel*, Cleveland, Ohio.

George S. Jameson, supervisor of the Order and Stores Department at the River Works of the General Electric Co., Lynn, Mass., retired from active service September 1st after 52 years of continuous service with the company and its predecessor, the Thomson-Houston Co. He was guest of honor at a testimonial banquet attended by 400 executives and associates.

Eli Jensen, Purchasing Agent for Wittenberg College, Springfield, Ohio, and a former president of the Springfield Association, has been elected to the National Executive Committee of the American Legion. Mr. Jensen is a Past State Commander of the Legion in Ohio.

Frank G. Planten has been appointed Purchasing Agent of the Linen Thread Co., Paterson, N. J., succeeding the late H. R. Smith.

B. C. Ahrens has been appointed executive secretary of the Educational Buyers Association, with headquarters in New York City.

Lyman B. Waters has been named General Purchasing Agent of the Standard Oil Company of California, San Francisco, succeeding James MacPherson who has been placed in charge of the company's operations in the Near East. Mr. Waters has been Assistant Purchasing Agent for the past several years.

Russell B. Day, Purchasing Agent of the Wico Electric Co., Springfield, Mass., has been transferred to the company's sales department, in charge of the southwestern territory, with headquarters at Tulsa, Okla. Alfred Parker has been named Purchasing Agent to succeed Mr. Day.